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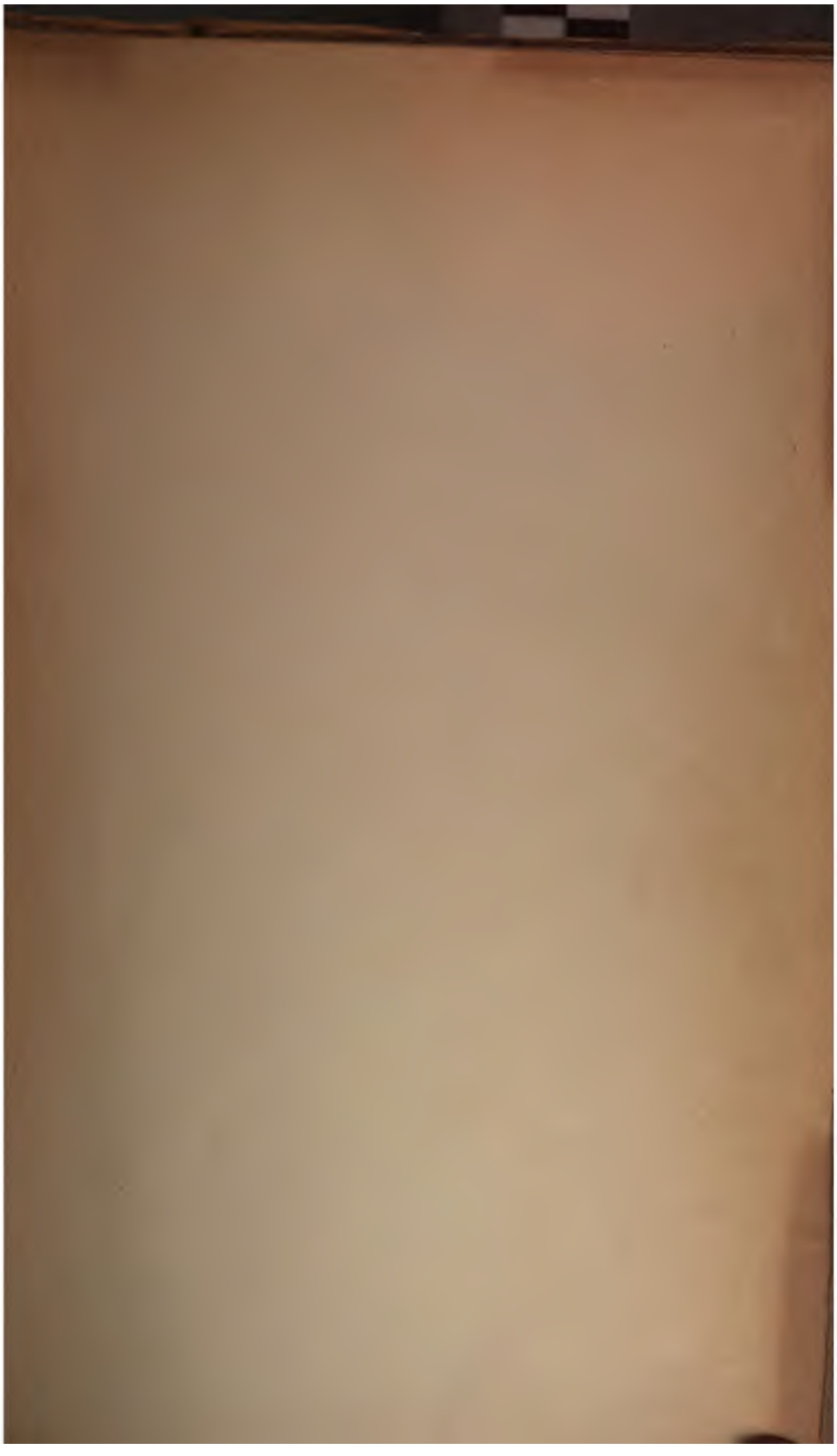

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U. S. NATIONAL MUSEUM.

BULLETIN

OF THE

UNITED STATES NATIONAL MUSEUM.

No. 31.

SYNOPSIS OF THE NORTH AMERICAN SYRPHIDÆ.

BY

SAMUEL W. WILLISTON, M. D., PH. D.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1886.

Department of the Interior:
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This work (Bulletin No. 31) is the forty-first of a series of papers intended to illustrate the collections of natural history and ethnology belonging to the United States, and constituting the National Museum, of which the Smithsonian Institution was placed in charge by the act of Congress of August 10, 1846.

It has been prepared at the request of the Institution, and printed by authority of the honorable Secretary of the Interior.

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SPENCER F. BAIRD,
Secretary of the Smithsonian Institution.

SMITHSONIAN INSTITUTION,
Washington, July 23, 1886.

DEPARTMENT OF THE INTERIOR:
U. S. NATIONAL MUSEUM.

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PREFACE.

That which has been aimed at in the present Synopsis is the description, as full and complete as possible, of the North American Syrphidæ. The labor involved in the determination of our diptera, save such as have been described or monographed by Dr. Loew and Baron Osten Sacken, is very great, owing to the often incomplete and unsatisfactory descriptions scattered through the literature of a half dozen languages. To bring together descriptions in such a way as will render the identification of our numerous species less toilsome and more certain, is the only means that will now materially further the study of American diptera; the description of desultory new species is detrimental to real progress in the knowledge of our fauna. My aim has been the study of genera and species, to so describe and figure those of the United States as to render them more easily determinable. With every page I write I feel more fully how difficult descriptive dipterology really is, and that only a beginning has been made in the study of this interesting family. But the work will, I trust, serve a useful purpose in pointing out what the needs and necessities are, and to pave the way for a future exhaustive monograph of the family, based upon a wider knowledge than is now possible.

I have given especial attention to this family since the beginning of my dipterological studies eight years ago, and have collected a large part of the species, either in New England or the West. I could not, however, have accomplished what I have, except by the aid of the many friends who have kindly sent me material. Without in any way depreciating the favors of others, I would express my acknowledgments especially to Prof. J. H. Comstock, of Cornell University, for the aid furnished me in the examination of a considerable collection, among which I found the very interesting genus *Senogaster*; to Mr. Eugene L. Keen, of Philadelphia, who, in the most generous way, gave me freely everything I desired from his industrious collecting; to Prof. C. V. Riley, of Washington, for the privilege of examining his large collections, including the excellent one of Mr. E. Burgess; and to Mr. D. W. Coquillett, of Anaheim, Cal., Mr. Theodore Pergande, of Washington, D. C., and Dr. George Dimmock, of Cambridge, for the addition of not a few species otherwise unknown to me. Other aid has been afforded me by

Prof. J. A. Lintner, of Albany, Mr. G. F. Gaumer, of New Mexico, and various others whose names will be found in their appropriate places. To all these I would express my sincerest thanks. Nor should I neglect to mention the extensive collections from the West and Southwest obtained from Messrs. H. K. Morrison and O. T. Baron, and from San Domingo, from Mr. G. F. Frazar.

Other kind favors, which I would gratefully acknowledge, were received from Prof. H. A. Hagen, of Cambridge, who kindly permitted me to study for several days in his laboratory the type collections of Loew and Osten Sacken. My readers will pardon me in the pride I take in stating that of nearly two hundred species which I had identified absolutely independently from descriptions, I found upon comparisons with the types and identified species in the Loew and Osten Sacken collection but three or four discrepancies. I can give no higher praise to the work of these two authors that admits of such close results. To Mr. S. H. Scudder, my thanks are due for his kindness and courtesy in permitting me to study his collections of fossil diptera and drawings. To Prof. A. Van Name, the librarian of Yale College, my sincere thanks are also due for his unfailing courtesy and assistance. Nor should I neglect to speak of the encouragement and assistance that have been afforded me by my wife.

Of the published writings on this family, I have been mostly indebted to those of Schiner, to whom the classification of the family owes much, and to the writings of Loew, Osten Sacken, Wiedemann, and others, wherever they were accessible. Of Baron Osten Sacken's work here, as elsewhere, I cannot speak in terms of too great praise. His descriptions are clear, accurate, and conscientious; I have never been in doubt regarding the correct identification of his species in this family. How much the present results are owing to his labors will be apparent to any one who will even cursorily examine the following pages. My heartiest thanks are likewise due him for the constant interest he has taken in my studies, during the years that I have had the pleasure of correspondence with him. Of Loew's work I need not speak. No better monument to a talented, learned, and versatile man exists anywhere in the domain of dipterological literature—and this field has been cultivated by most able, as well as poor workers—than in his Diptera Centuriæ and Monographs. His Latin descriptions are models, and very much of the synonymy of the American Syrphidæ is due to him. Nor should I fail to mention the conscientious work of Mr. F. M. v. d. Wulp, of Holland. He has not written a great deal on North American diptera, and that, unfortunately, is mostly in the Dutch language; but what he has written makes one wish that he had published more on our fauna in the English language, which he uses with fluency. Mr. J. F. M. Bigot, of Paris, has, with commendable zeal and industry, written much on the North American Syrphidæ; his works may be consulted with profit.

My work must have shortcomings and errors; the subject is by no means an easy one. I only ask that it be accepted as an honest endeavor to advance the study of these neglected but interesting insects.

The types of all but two or three of the new species described by me, together with my entire collection in this family, will be preserved in the National Museum for future reference and revision.

S. W. WILLISTON.

YALE COLLEGE, NEW HAVEN, CONN.,
June 1, 1886.

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PART I.

CLASSIFICATION.

NORTH AMERICAN SYRPHIDÆ.

PART I.—CLASSIFICATION.

The family of *Syrphidæ* is one of the most extensive in the order of diptera. Nearly or quite two thousand species are known from throughout the world, and many new forms are constantly being added. They contain among them many of the brightest-colored flies, and numerous specimens are sure to appear in every general collection of insects. None are injurious in their habits to man's economy, and many of them are very beneficial. In the following pages about three hundred species are described from the region north of Mexico, so that I trust even the non-entomological student, with a little exertion, may be able to identify them. That there are many more species within these limits is certain, especially in the southern and western regions. From Europe over five hundred and fifty species have been catalogued; doubtless nearly or quite as many will be eventually accredited to North America.

The family is easily and exactly defined; with but few exceptions by the presence of the spurious vein of the wings alone; in all, by the structure of the head and the neuration. Its position in the dipterological system is thus given by Brauer:

Suborder CYCLORRHAPHA.

Section *Aschiza.*		Section *Schizophorida.*	
Tribe *Syrphidæ.* (*Syrphidæ, s. str., Pipunculidæ.*)	Tribe *Hypocera.* (*Phoridæ, Platypezidæ.*)	Tribe *Bumidæ.*	Tribe *Pupipara.*

Schizometopia. (*Muscidæ calyptratæ.*)	*Holometopia.* (*Muscidæ acalyptratæ.*)

While, as a general rule, the *Syrphidæ* present excellent specific characters, there is a remarkable dearth of generic or group characters. The richness in species, the many intermediate forms, the absence of marked plastic variations, all tend to make the family in its subdivisions an exceedingly difficult one to define with clearness. From this fusion or coalescence of genera, we are often compelled to base our classification upon what appear very trivial differences. Species must be grouped together that show natural relationships, drawing the dividing lines where the largest intervals occur. Their classification ulti-

mately must in many cases depend largely upon convenience, and the views of those best qualified to interpret natural characters. Not seldom these views will rest, more or less, upon an indefinable *tout ensemble*, the instinctive or natural grouping of the trained eye and mind. There are no generic and specific limitations in nature; this fact, thanks to modern philosophy, we have nearly all learned. But by no means does it follow that there is no such thing as classification. A horse and an ass might show all possible intermediate characters, so that one could not say when the horse put off the caballine and took on the asinine nature; but nevertheless the horse is still a horse and the ass an ass; the only vexatious question would be when and where to label the one *caballus* and the other *asinus*. So, indeed, does the question come home pertinently in the small fragment of zoological life treated in the following pages. With a knowledge of but few species, classification was not difficult, and definition easy, but with the discovery of numerous and multifarious forms generic bands become stretched and thinned till at last they are rent asunder, and nothing is left but individual coherence. Even a novice would be astonished at the proposition to unite a *Chrysogaster nitida* and a *Syrphus lapponicus* in the same genus, yet the chain between them is complete: nowhere do differences exist that can be accredited with more than specific valuation. Nor is this a solitary instance; the majority of genera in the family do not admit of true generic definition; the best that we can do is to point out where one shall end and the other begin, a proceeding which sometimes (*Helophilus*, for instance) entails the result that a species differs more from some of its own associates than it does from members of other genera. What, then, are we to do? Make a genus for every difference? As well abandon species. Make only genera that can be limited by generic characters? As well abandon the family. In steering clear of Scylla we may be engulfed in Charybdis.

No characters offer for the accurate or even clear separation into subfamilies. The best general division that we have was that proposed by the erudite Schiner, based upon the position of the anterior cross-vein. Though, like most of the higher characters in this family, it admits of no sharp definition, nor dispels doubt in many cases, it is unquestionably a natural one. In no case can a species with a well marked, oblique, and exterior cross-vein be placed among those with an internal and rectangular one, yet in not a few we cannot easily decide to which of the divisions a given species belongs. In the following classification I have recognized fourteen groups, not because they are clearly defined, for but very few are, but because some grouping is absolutely necessary. It has been criticised as in some respects artificial; this I by no means deny, in the sense that they cannot be separated, except upon ultimately trivial distinctions, but that they are in the main a natural grouping I do most earnestly contend. A faunistic classification is confessedly imperfect, though, as in the case of Osten Sacken's Diptilida,

a limited classification may happily admit of a far wider application. In such a family as the Syrphidæ many disturbing elements must naturally intrude themselves with the ingress of new forms; but the knowledge of the world's fauna can only be obtained from the assimilation of more or less heterogeneous parts into one homogeneous whole. My autoptic knowledge of genera is almost exclusively confined to the European and North American forms, types of nearly all of which I have examined.

SYNOPTIC TABLE OF TRIBES.

a. Anterior cross-vein of the wings distinctly before the middle of the discal cell, usually nearly rectangular; third longitudinal vein rarely with a distinct curvature into the first posterior cell; hind femora rarely thickened. Usually smaller, more delicate species, generally thinly pilose ..... SYRPHINÆ.

b. Third joint of the antennæ with a thickened styliform arista or style. PELECOCERINI.

bb. Antennæ with a dorsal bristle.

c. Third joint of the antennæ not both elongate and with a strongly plumose arista; marginal cell open.

d. Antennæ longer than the head, rather large species ..... MICRODONINI.

dd. Antennæ not longer than the head.

e. Front long, much narrowed above in the female, cheeks narrow, face considerably narrowed below, abdomen frequently contracted beyond the base, more or less slender ..... BACCHINI.

ee. Face not remarkably narrowed below.

f. Epistoma projecting, face without tubercle; abdomen contracted toward the base, in outline more or less club-shaped; small species. SPHEGININI.

ff. Not such species.

g. Color chiefly reddish or lutescent ..... BRACHYOPINI.

gg. Color not chiefly reddish or lutescent.

h. Metallic green, metallic green and black, or black species, rarely with luteous markings at base of abdomen, and on the humeri and face; abdomen never with entire shining cross-bands ..... CHILOSINI.

hh. Black or greenish black species with yellow or yellowish stripes and bands, or at least with entire shining cross-bands on abdomen.

i. Face black ..... MELANOSTOMINI.

ii. Face partly or wholly yellow ..... SYRPHINI.

cc. Third joint of antennæ elongate, with a strongly plumose arista; marginal cell usually closed; thick-set species ..... VOLUCELLINI.

aa. Anterior cross-vein near or beyond the middle of the discal cell, usually oblique; hind femora frequently thickened. Usually larger, robust, pilose species.

j. Antennæ with a dorsal bristle ..... ERISTALINÆ.

k. Third longitudinal vein bent deeply into the first posterior cell ..... ERISTALINI.

kk. Third longitudinal vein only gently curved or straight.

l. Arista plumose.

m. Third joint of antennæ elongated ..... VOLUCELLINI.

mm. Third joint of antennæ subquadrate; marginal cell open ..... SERICOMYINI.

ll. Arista bare or pubescent.

n. Thorax with distinct yellow markings ..... MILESINI.

nn. Thorax without yellow markings ..... XYLOTINI.

jj. Antennæ with a terminal style ..... CERINÆ.

MICRODONINI.

Anterior cross-vein near the base of the discal cell, or near the middle, and more or less oblique. Marginal cell open. Legs slender, third joint of the antennæ, at least, elongate, the first more or less so. Large, species.

a. Face rounded, pilose.

b. First posterior cell with a stump of a vein from the third longitudinal vein; scutellum flattened, usually with two points ..... MICRODON.

bb. First posterior vein without such a stump of a vein; scutellum without points. MIXOGASTER.

aa. Face produced downwards, bare..... .....CHRYSOTOXUM.

This group as here distinguished is artificial. *Microdon* is one of the most peculiar genera in the family. The presence of a stump of a vein in the first posterior cell is characteristic, reappearing in *Ceria*, and occasionally in species allied to *Eristalis*. The presence of points on the scutellum reminds one of the *Stratiomyidæ*, but the resemblance is not great. This character was used by Wiedemann to found the genus *Cerodontha*, but it is of slight importance, two such closely allied species as *M. globosus* and *M. fuscipennis* differing in its presence. *Mixogaster* doubtless finds a place here, notwithstanding its club-shaped abdomen, by reason of the structure of the head and wings. The European *Psarus* likewise evidently finds its nearest relationship here, though showing an affinity with *Paragus* of the next group.

Chrysotoxum is more aberrant, and is a disturbing element in the arrangement of the genera. The only thing it has in common with *Microdon* is the elongate antennæ; the neuration approaches more that of the second division. Singularly, too, the genus is a close one, the species all showing great structural and color resemblance. Why the group Chrysotoxinæ should be retained to embrace forms so diverse as *Orthoneura* and *Psarus* I do not understand.

CHILOSINI.

Small to moderately large species, seldom with light markings (Paragus Chilosia, Pipiza spp.), usually the color is uniformly dark, with or without metallic greenish markings, or velvety deep black, the face never golden (except in Paragus), the abdomen never with entire cross-bands. Third longitudinal vein nearly straight, anterior cross-vein basal [illegible]

a. Abdomen [illegible] other elongate, outer cross-vein more or less inclined.

b. [illegible] and with a row of short spines below; body clothed with sparse [illegible] ..... LEPIDOSTOLA Wil.

bb. Abdomen not thickened, body not [illegible].

c. Head [illegible] and face in both sexes [illegible], with transverse wrinkles; hind tarsi of male usually [illegible]. ..... CHRYSOGASTER Meig.

cc. Head and face not wrinkled; face hairy, [illegible] ..... PSILOTA Meig.

aa. Abdomen not [illegible], as if on the hind [illegible] outer cross-vein more usually reflected, antennæ usually short.

d. Face evenly rounded and pilose.....PIPIZA Fallen.
dd. Face not evenly rounded and pilose, tuberculate.
e. Abdomen with only four visible segments; arista short, subapical.
NAUSIGASTER Will.
ee. Abdomen with at least five visible segments.
f. Face partly or wholly yellow; abdomen punctulate, antennæ elongate; small species.....PARAGUS Latr
ff. Face wholly black, or at least only with luteous spots; antennæ short.
g. Hind femora slender.....CHILOSIA Meig.
gg. Hind femora thickened; epistoma projecting.
h. Scutellum unusually large, nearly square in outline; males dichoptic.
CHALCOMYIA Will.
hh. Scutellum not unusually large, considerably broader at the base; males holoptic.....MYIOLEPTA Newm.

There is considerable diversity in this group, but there can be no natural division, so closely do the characters blend from one to the other, and because the relationships do not permit a linear arrangement of the genera. *Chilosia* may be taken as its most predominant type, from which *Chalcomyia* and *Nausigaster* depart the most. The genus itself is a large one, with a considerable diversity of forms, but which, so far, has eluded attempts at rational subdivision. The presence of a swollen frontal triangle, or frontal groove, is characteristic in not a few species, but they are evanescent, and not of sufficient uniformity to warrant their use exclusively as a generic distinction. The neuration varies from a Pipizoid to a Syrphoid type; none except artificial distinctions can be made use of here. The antennæ show only slight variations; generic characters based chiefly upon these organs are not generally reliable through out the family. The plumosity of the arista has been proposed as a means of distinction; but the plumosity is never very strong, and the ultimate generic boundary would often depend upon the power of the lens employed; nor can this character be used in connection with the pilosity of the eyes and the hairiness of the face, unless we are prepared to dub every possible permutation of the three characters with an independent title. The pilosity of the eyes is also unsatisfactory; its use will separate allied forms and bring together irrelevant ones; moreover, here, likewise, the microscope and possibly the imagination would sometimes be the ultimate generic distinctions. The hairiness of the face is in itself wholly insufficient, and bears no constant relation to the other more important characters. The thoracic bristles imperceptibly change to hair and then to pile. The limits of the genus are also doubtful. From *Chrysogaster* on the one hand, and *Melanostoma* on the other, nothing more than specific separation is yet possible. The relation to *Pipiza*, through *Chrysogaster* and *Psilota*, is equally obvious. Yet again we cannot overlook the natural affinity with species of *Myiolepta*.

Pipiza and *Psilota*, as here employed, are unquestionably nearly related forms; indeed further discoveries may require their union. The former genus has been very much subdivided. A knowledge of numerous species, however, constantly tends to break down the distinc-

tions. The following are the characters used by Kowarz,* an able European dipterologist, to define the generic subdivisions:

1.—Third antennal joint slender and long 2
Third joint short and broad 3
2.—The auxiliary vein terminates before the anterior cross-vein.....PIPIZELLA Rond.
The auxiliary vein terminates beyond the anterior cross-vein....HERINGIA Rond.
3.—Frontal triangle of the male comparatively large and arched; front of female without a tuft of white hairs near the orbit..... 4
Frontal triangle not large, of usual form; front of female with a tuft of white hairs near the orbit.....PIPIZA Fallen.
4.—Hind coxæ of male with spinous process; front of female with a distinct transverse groove near the middle .....CNEMODON Egger.
Male coxæ without spinous process; front of female without transverse groove.....PENIUM Phil.

An examination of these characters seriatim will, I think, show their invalidity as generic distinctions. I by no means wish to say that they are without value, or that the names should be abandoned, but that their present substitution is not justified.

1. All intermediate stages will occur between a long, slender antenna and a short broad one, where it will be impossible to refer a species to either of these divisions without we take an artificial standard.

2. The same may be said of the termination of the auxiliary vein. What will we do with the species where the termination is opposite the cross-vein?

3. The presence of a swollen frontal triangle is a useful character, but the same objection may be urged against it as against the two preceding ones. The same feature occurs in species of both *Chilosia* and *Chrysogaster*, and was formerly made use of, in the former at least. Its acceptance here will, *pari passu*, necessitate its employment in allied genera.

4. The presence of a coxal spine is perhaps of greater value, yet we must not forget that the same character is disregarded elsewhere in the family. No one will think of generically separating *Xylota bicolor* and *X. tibialis*, or *Helophilus distinctus*, that has been confounded with *H. chrysostomus*, on this character.

The introduction of such fine distinctions is undesirable in any genus when characters of the same or similar nature are unrecognized in allied genera. It is true that arbitrary distinctions in the comparative shape of the antennæ, etc., we are compelled to use to a great extent in the *Muscidæ calyptratæ;* but at the same time we must admit the almost insuperable difficulties which these families present to systematic study; so great, indeed, that there are but three or four entomologists (among whom we must award to Mr. Kowarz the first rank) who are capable of interpreting them.

Two species of *Triglyphus* have been described by Loew; both of them I have placed under *Pipiza*, as from an examination of the types

*Wien Ent. Zeitung, iv, 241.

at Cambridge I could not discover differences. The genus, as I understand it, is based upon the presence of but four visible segments in the abdomen with elongation of the median ones. The types of these species, however, show the fifth segment to be as well developed as in other species of *Pipiza*, and with no appreciable greater development of the third and fourth segments.

The genus *Nausigaster* is a very peculiar one, and has only slight relationship to the other genera, except perhaps *Paragus*. On account of its general habitus, its punctate markings, and the structure of the abdomen, I place it here.

It may be objected that I place the genus *Myiolepta* in this group. Perhaps did I know the European species, I should feel the force of the objection myself, but certainly in the American species the affinity with species of *Chilosia* cannot be overlooked. Where the hind femora are but little thickened, and without spines, there is but little to distinguish them; even the luteous coloration in the female of some species mimics that in the females of some *Chilosiæ*, and the male facial tubercle repeats itself in certain *Chilosiæ* and *Chrysogastræ*.

How Loew could have overlooked the striking relationship between *Lepromyia calopus* and *Myiolepta strigilata* I cannot account for. In the latter the third joint of the antennæ is distinctly elongate, the femora are all thickened, with short spines below, and the body is clothed with sparse tomentum, all characters of the genus. The genus thus holds an intermediate position, connecting *Chrysogaster* and *Myiolepta*.

MELANOSTOMINI.

Small, elongate, thinly pilose species, deep black or shining green, the abdomen usually slender with interrupted bands of bright yellow, orange, or greenish-yellow color; face uniformly black, or at least never with light ground color. Antennæ short, face tuberculate; neuration Syrphoid; legs slender.

a. Wings not longer than the abdomen; ocellar tubercle large, prominent; abdomen depressed, the lighter markings ferruginous or orange colored.
PYROPHÆNA Schiner.

aa. Wings longer than the abdomen; ocellar tubercle not unusually large; abdomen more slender, the cross-bands yellow or greenish yellow, sometimes shining metallic.

b. Front tibiæ and tarsi of the male dilated, those of the female slightly widened.
PLATYCHIRUS St. Fargeau and Serville.

bb. Front tibiæ and tarsi in both sexes slender, not widened. MELANOSTOMA Schiner.

The genus *Melanostoma* may be taken as the type of this group. The only ultimate difference between this genus, so far as I can discover or define, and *Chilosia* is in the absence of entire abdominal cross-bands. On the other hand, the distinction from *Syrphus* is purely specific. The relationships of *Platychirus* and *Pyrophœna* are obvious; indeed in the

female there is scarcely any appreciable difference, at least in the former genus. *Pyrophæna* is an excellent example of a faulty taxonomic classification; while the flattening of the forelegs is made a generic character in *Platychirus*, much greater structural differences in the legs of *Pyrophænæ* only receive a specific valuation. Undoubtedly, should the number of species warrant it, a generic line will be drawn between *P. ocymi* and *P. rosarum*, but on the basis of natural classification it should not matter whether a genus contained one or one thousand species.

It may be objected that this group is not entitled to the rank I give it; but if it be united with the *Syrphini*, the *Chilosini* must be also. Shall we place *Chrysogaster* and *Syrphus* in one group? As well place the whole family in one group.

SYRPHINI.

Black or greenish-black species, usually with yellow abdominal bands, the face wholly or in part yellow. Marginal cell of the wings wide open, third vein rarely (Didea) *curved into the first posterior cell, anterior cross-vein near the base of the discal cell. Antennæ short, face tuberculate, abdomen usually oval, legs slender, hind femora rarely thickened* (Mesograpta *sp.*).

a. Thickly pilose species; abdomen quite oval, broader beyond the middle. Basal portion of abdomen yellow, terminal portion black ..... LEUCOZONA Schiner.

aa. Rather bare species; abdomen not so marked.

b. Thorax never with yellow lateral markings.

c. Sixth abdominal segment of the male as long as the two preceding together, but narrower, somewhat tubular, unsymmetrical; on underside of the seventh segment with two long linear subparallel appendages, arcuate, bidenticulate at the end, embedded in grooves when at rest. In the female the fifth segment half as long as the preceding. Scutellum much raised, exposing metanotum ..... EUPEODES O. S.

cc. Hypopygium without slender appendages, sixth segment of male not peculiar; fifth segment of female one-third or one-fourth as long as preceding segment.

d. Third longitudinal vein with a distinct curvature into the first posteror cell; third joint of the antennæ elongate-oval..... DIDEA Macq.

dd. Third longitudinal vein straight or gently curved; third joint of antennæ short oval.

e. Eyes of male with an area of enlarged facets above; front very convex; hypopygium very small ..... CATABOMBA O. S.

ee. Eyes of male without an area of enlarged facets above; front moderately convex; hypopygium not very small..... SYRPHUS Fabr.

bb. Thorax with yellow lateral stripes.

f. Eyes of male with an area of enlarged facets above; fourth segment of abdomen in both sexes with two median yellow stripes and an oblique spot on each side ..... ALLOGRAPTA O. S.

ff. Eyes of male wholly wi
ab

g. Face receding; thorax without median dorsal cinereous line.
XANTHOGRAMMA Schiner.

gg. Face strongly projecting below.
h. Dorsum of thorax with a median cinereous line.....MESOGRAPTA Loew.
hh. Dorsum of thorax without such line .....SPHÆROPHORIA St. F. & Serv.

The genus *Syrphus*, as now restricted, presents a remarkable uniformity in structural characters, and even in markings, as well as in the fixity of specific characters. A few divergent forms, it is true, as *S. geniculatus*, are seen, but on the whole the genus is a close one; this, however, has not prevented attempts at subdivision. There are, though, many osculating points among its correlated forms. From *Dideu*, through *S. arcuatus lapponicus*, nothing more than specific differences are found. From *Xanthogramma*, through *X. emarginatum*, differences of even less value appear. Its coalescence with *Melanostoma* (through *S. simplex*, for instance) has already been touched upon. Other allied genera are *Catabomba* and *Eupeodes*, where the differences are almost wholly confined to the male sex. *Leucozona* is structurally allied, but the pilosity and markings remove it further. With *Allograpta*, *Sphærophoria*, and *Mesograpta*, the relationship is likewise very apparent. All these have a more or less elongate abdomen, as in some species of *Syrphus*, but besides the yellow markings of the thorax the structure of the head is similar in the last two, to which *Asarkina* may be added.

PELECOCERINI.

The genus *Pelecocera* shows the nearest relation with the *Syrphini;* but the structure of the head removes it so far from the other genera that I prefer to give it an independent place here for the present.

SPHEGININI.

Small, slender, elongate, thinly pilose species, with more or less yellow markings on head and abdomen. Antennæ short, epistoma produced; marginal cell of the wings open, third longitudinal vein straight or gently curved, anterior cross-vein near the base of the discal cell and rectangular, abdomen contracted towards the base, the greatest width beyond the middle, in outline club-shaped or spatulate; hind femora thickened.

h. Epistoma produced anteriorly, in profile deeply concave from antennæ to tip; third joint of antennæ nearly orbicular.....SPHEGINA Meig.
hh. Epistoma produced more downward, in profile slightly concave from antennæ to tip .....NEOASCIA Will.

This group in America offers well-defined limitations, characterized by the small size, abdomen, and face. It is one of the oldest geologically.

BRACHYOPINI.

Moderate sized, nearly bare species, chiefly or wholly reddish or luteous, or, if in large part black, without light yellow markings. Antennæ short; abdomen not club-shaped; anterior cross-vein before middle of the discal cell, marginal cell wide open.

a. Epistoma produced into a long slender porrected snout; femora slender; the third longitudinal vein joins the costa beyond the tip...RHINGIA Scopoli.

aa. Face not so produced, hind femora more or less thickened.

b. Face produced, obtusely tuberculate, thorax with bristles, abdomen elongate, EUGENIAMYIA Will.

bb. Face carinate, abdomen oval, first posterior cell short petiolate.

c. Arista bare .....BRACHYOPA Meig.

cc. Arista plunose .....EXOCHILA Rond.

These genera present a considerable divergence, but are best associated together. Why they should hitherto have been classed among the *Volucellinæ*, rather than the *Syrphinæ*, I do not understand. *Rhingia* is well marked in its remarkably projecting epistoma. In neuration it finds its greatest resemblance in some species of *Chilosia*.

Brachyopa, *Exochila*, and *Eugeniamyia* are all closely allied, and might, perhaps, be best associated in the same genus. There is a tendency in all the genera to the presence of thoracic bristles.

VOLUCELLINI.

Mostly large species, uniform in color or variable. Third joint of the antennæ more or less elongate, the arista always plumose; eyes usually pilose; body nearly bare or thickly pilose; abdomen short, thick, strongly convex above; marginal cell of the wings usually closed and petiolate, third longitudinal vein nearly straight, the fourth vein joins the third a considerable distance before the tip, inflected; anterior cross-vein usually towards the base of discal cell; legs slender, hind femora never thickened.

a. Arista very densely plumose, appearing like a solid mass...COPESTYLUM Macq.

aa. Arista feathery plumose .....VOLUCELLA Geof.

The present and following groups contain, with few exceptions, more robust, thick-set, and usually pilose, species. The two genera from the United States, located here, are sharply separated from all others by the presence of a closed marginal cell and plumose arista. In certain species of *Volucella*, however, the marginal cell is closed very near the tip of the second longitudinal vein, and rarely, in some individuals, is narrowly open. Such species form the natural connection with *Phalacromyia*, differing only in this respect, a genus, so far, extralimital, and bearing the same relation to *Volucella* that *Helophilus* does to *Eristalis*. It is very desirable that *Volucella* should be divided; the species are numerous, and a considerable variation exists among them. No characters have, however, in my opinion, been found that will accomplish this result satisfactorily. *Temnocera* St. Farg. & Serville, and *Atemnocera* Bigot, are too artificial in their limitations. The former is based upon the excision of the third joint of the antennæ and the presence of bristles upon the scutellum. In a number of species the bristles are

present without the antennal character—for these *Atemnocera* is proposed. But to be consistent yet another division should be created for the excised antennæ without the scutellar bristles, as in *Volucella megacephala*. Even such a dismemberment of the genus might be well, were it natural, but it is not; allied species are torn asunder and unrelated ones are thrown together. A natural classification, moreover, would require the same treatment of *Phalacromyia*.

SERICOMYINI.

Large species; antennæ short, the third joint scarcely longer than broad; arista basal, plumose; anterior cross-vein of wings oblique, near the middle of discal cell; hind femora sometimes thickened.

a. Moderately pilose; abdomen with yellow interrupted cross-bands..... SERICOMYIA Meig.

aa. Thickly pilose, abdomen uniformly black..... ARCTOPHILA Schiner.

This group at present is limited without much difficulty. Still the forms are not very closely allied in some of their species. The connection between the two genera is found in *S. militaris*. In *Arctophila flagrans* the thickened hind femora and curved third longitudinal vein present a relationship with the next group.

ERISTALINI.

Mostly large, pilose species, uniform in color, or more or less variegated; third joint of the antennæ short, oval or transverse; third longitudinal vein with a deep concavity into the first posterior cell; anterior cross-vein near or beyond the middle of the discal cell; hind femora thickened, except in species of Eristalis.

a. Marginal cell closed and petiolate.

b. Thorax never with yellow markings.

c. Frontal triangle of male strongly protuberant ..... DOLIOSYRPHUS Bigot.

cc. Front evenly arched..... ERISTALIS Latr.

bb. Thorax with yellow spots.

d. Hind femora without a conical projection below, near the end, PTEROPTILA Loew.

dd. Hind femora with a projection below (*Milesia*).

aa. Marginal cell open.

e. Arista plumose (*Sericomyini*).

ee. Arista bare.

f. Face with a longitudinal ridge in the middle; hind femora strongly thickened, and with an angular protuberance below..... TROPIDIA Meigen.

ff. Face not distinctly carinate; tuberculate or rounded.

g. Thorax and scutellum not densely pollinose above.

h. Third joint of antennæ oval; dorsum of thorax usually with distinct stripes, HELOPHILUS Meigen.

hh. Third joint of antennæ broad; throax not vittate.

i. Thickly pilose..... MALLOTA Meigen.

ii. Thinly pilose ..... TRIODONTA Will.
TEUCHOCNEMIS O. S.

gg. Thorax and scutellum very densely pollinose above..... PTERALLASTES Loew.

This group is a natural one, but it is not distinctly separated from the following. *Eristalis* shows a considerable diversity in coloration, but less in structure. In many of the species the hind femora are slender, in others sometimes much thickened (*Simoides* Lw.); this character will not, however, serve for generic separation. Nor can the absence of the moderate plumosity of the arista (*Eristalomyia* Rond.) serve to divide the genus. It throws together unrelated species. The pilosity of the eyes seems to be equally unsatisfactory. The relationship of *Plagiocera*, *Senaspis*, *Priomerus*, *Doliosyrphus*, *Megaspis*, etc., cannot always be sharply defined. Two of these appear in our fauna, and will readily be distinguished by the general habitus, structure of the head, etc. In North America, *Eristalis* is sharply distinguished from *Helophilus* by the closure of the marginal cell. In Europe and Africa, however, the two genera coalesce, some species of *Eristalis* having dichoptic males (*Eristalinus* Rond.); other species of *Helophilus* holoptic males and without any of the characteristic markings, and with the marginal cell only narrowly open. So, too, *Helophilus* is ultimately distinguished from *Mallota* only by a very slight difference in the third joint of the antennæ.* The group of genera immediately surrounding *Mallota* is an unsatisfactory one, and very difficult to define. *Pterallastes* will be easily distinguished by its general habitus, and the presence of dense pollen on the upper surface of the thorax and scutellum, but *Teuchocnemis* and *Triodonta* are not so easily disposed of; both of them differ from *Mallota* in being thinly pilose, but there is no other tangible character. *Teuchocnemis* was based upon the presence of an internal hind tibial spur in the male, but the same feature occurs in the true *Mallotæ*. The two species placed in this genus are not homogeneous. *Triodonta* cannot be placed under *Merodon*, on account of the antennæ, termination of the fourth vein, etc.; its dichoptic male is common to European species of *Mallota*. It is very singular that the genus *Merodon*, so richly represented in Europe, does not occur in our fauna. The relationship of *Mallota* is evident with *Xylota*. (See Schiner, Nov. Exped., 360.)

XYLOTINI.

Third longitudinal vein only gently curved, marginal cell open; anterior cross-vein near or beyond the middle of discal cell, usually oblique; antennæ short; thorax without yellow markings.

Xylotini.—Abdomen more or less elongate; hind femora more or less thickened, with projections or spines below; face without tubercle; nearly bare species; eyes large.

a. Face strongly carinate; hind femora thickened, with an angular protuberance below near the end ..... TROPIDIA Meig.

aa. Face not carinate.

b. Third segment of the abdomen in the male very much contracted, cylindrical, the hind femora much thickened, with a bifid spine below at the tip. Eyes very large, face small ..... SENOGASTER Macq.

* Even this difference is not accepted by Schiner in *Helophilus antipodus* Sch.—Novara Exped., 359.—Auckland.

bb. Hind femora more or less thickened, with spines or bristles below, never with a bifid spine near the tip.

c. Hind femora very much thickened, anterior cross-vein rectangular, SYRITTA St. F. & Serv.

cc. Hind femora never remarkably thickened, hind coxæ often with spinous process; cross-vein always oblique.....XYLOTA Meig.

Criorhinini.—Mostly large species, pilose.

a. Scutellum, margin of thorax, and pleuræ with bristly hairs; face distinctly tuberculate; femora slender..... CHRYSOCHLAMYS Rond.

aa. Thorax wholly without bristly hairs.

b. Face short, not produced, concave, not tuberculate; hind femora more or less thickened.

c. Abdomen elongate.

d. Abdomen shining or opaque black.....BRACHYPALPUS Macq.

dd. Abdomen with bright bronze cross-bands.....CALLIPROBOLA Rond.

cc. Abdomen very broad, thorax densely pilose, large species, POCOTA St. Farg. & Serv.

bb. Face produced, longer than the front.

c. Face produced forward, pointed, concave from the antennæ to the tip, not tuberculate, subcarinate; hind femora thickened..... ....CRIOPRORA O. S.

cc. Face not evenly concave, tuberculate.

f. Third joint of antennæ produced above into a conical process, terminating in the thickened arista; femora slender .....MERAPIOIDUS Bigot.

ff. Third joint of antennæ transversely oval, but little broader than long; femora rarely thickened.....CRIORHINA Macq.

Tropidia, *Senogaster*, *Syritta*, and *Xylota* form a natural, slightly divergent group, showing an unquestionable relationship on the one hand with *Mallota*, on the other with *Brachypalpus*.

The relationship of *Brachypalpus* with *Pocota* and *Calliprobola* is evident, and between these and *Criorhina*, *Crioprora* forms a natural connection. *Merapioidus* and *Chrysochlamys* are less intimately related.

MILESINI.

Large species, thinly pilose or nearly bare, with yellow spots or stripes on the thorax above, the abdomen conspicuously yellow banded. Anterior cross-vein beyond the middle of the discal cell, oblique; third longitudinal vein gently curved (*except in* Milesia). *Antennal arista bare; hind femora elongated and moderately thickened.*

a. Hind femora with a conical protuberance below, near the end.

b. Marginal cell of wing closed; antennæ short.....MILESIA Fabr.

bb. Marginal cell open, antennæ more or less elongate .....SPILOMYIA Meig.

aa. Hind femora without such protuberance; marginal cell open.

c. Antennæ inserted high up, on a conical projection; front short, face much produced downward .....SPHECOMYIA Latr.

cc. Antennæ situated low down, short; face not longer than the front..TEMNOSTOMA.

Spilomyia and *Temnostoma* are closely allied, as is also *Sphecomyia*. *Milesia*, in the structure of the face and wings, is more remote, but the legs and general habitus show an incontestable relationship.

The nearest relationship in the preceding group is evidently with certain species of *Criorhina*. A resemblance between *Milesia* and *Pteroptila* cannot be overlooked.

CERINÆ.

Rather large, bare, elongate species; antennæ longer than the head, second and third joints swollen, terminating in a style; anterior cross-vein beyond the middle of the discal cell, nearly straight; third longitudinal vein with a stump projecting into the first posterior cell. . . . CERIA Fabr.

This genus has been divided on the presence or absence of the frontal process, but the character is insufficient.

CHARACTERS OF THE FAMILY SYRPHIDÆ.

A false longitudinal vein between the third and fourth longitudinal veins; fourth longitudinal vein united at its extremity with the third; basal cells large; face without subantennal grooves.*

Head hemispherical, often elongated or produced in the lower part, as broad or a little broader than the thorax. Face moderately broad, bare, or clothed with dust or short pile, excavated in profile under the antennæ and projecting below, or with a distinct convexity near the middle part; never with longitudinal furrows or lateral ridges, usually convex transversely, sometimes with a median ridge. Oral opening large; proboscis rarely much elongated, usually but little projecting, and, when at rest, concealed within the mouth; palpi one-jointed; labrum-epipharynx, hypopharynx, maxillæ and labium present. Front never excavated, often swollen, sometimes with a more or less elongate process which bears the antennæ. Antennæ usually porrect, approximate at their base, three-jointed; the third joint more especially of varied shape, usually flattened and with a dorsal bristle, either bare or plumose; very rarely the third joint is not flattened, and is provided at the tip with a thickened style. Eyes large, bare or pilose, in the male usually contiguous between the base of the antennæ and ocelli. Ocelli always present. Thorax comparatively large and robust, moderately arched above; scutellum large, usually convex, often translucent, rarely with spines on its border. Tegulæ of moderate size. Abdomen composed of five or six visible segments, rarely with only four. Hypopygium usually not prominent. Shape of the abdomen variable; slender, linear, clubbed, short, oval, and all intermediate forms. Legs usually weak, sometimes strong; the hind femora not infrequently moderately or much thickened, the hind tibiæ not rarely arcuated and compressed, metatarsi rather long, coxæ short; the hind coxæ, femora, and tibiæ, more especially in the male, in not a few species, armed with spurs, protuberances, or spines; the front and middle tibiæ and tarsi rarely flattened, or with structural variation. Macrochætæ rarely present in any

* cells, etc.

part of the body; the body generally thinly pilose or nearly bare, but sometimes clothed with thick pile. Wings comparatively large, when at rest folded together over the abdomen, or half open; third longitudinal vein never forked, frequently with a more or less deep curvature on the outer part; marginal cell opened or closed, the fourth vein terminates in the third vein at or before the tip; neither of the intercalary veins present; anal cell always closed before the border of the wing; anterior cross-vein before or beyond the middle of the discal cell; *between the third and fourth longitudinal veins and nearly parallel with them there is a false or spurious vein*, nearly always present, and characteristic of the family.

TABLE FOR THE DETERMINATION OF GENERA.

1.—Antennæ with a terminal style **2**
Antennæ with a dorsal bristle **3**
2.—Antennæ cylindrical, first two joints elongate . . . . . **Ceria**, 259
First two joints short, third compressed (plate iv, fig. 14) . **Pelecocera**, 110
3.—Marginal cell of the wing closed and petiolate **38**
Marginal cell open **4**
4.—Anterior cross-vein of the wing distinctly before the middle of the discal cell, usually rectangular **5**
Anterior cross-vein ending near or beyond the middle of the discal cell usually oblique **43**
5.—Antennæ elongate **6**
Antennæ short **11**
6.—Dorsum of thorax without yellow lateral stripes **7**
Dorsum of thorax with yellow lateral stripes; large species (plate i, fig. 5) **Chrysotoxum**, 13
7.—Face rounded, pilose, not tuberculate, oral margin not projecting **8**
Face not evenly arched; tuberculate, or the oral margin projecting . . . **9**
8.—Large species; scutellum flattened, usually with spines or tubercles; a stump of vein in the first posterior cell from the third longitudinal vein (plate i, figs. 1–3) . . . . . **Microdon**, 3
Small species; scutellum without points; no such projecting stump (plate ii, fig. 1) . . . . . **Pipiza**, 22
9.—Body clothed with sparse tomentum; all the femora thickened and with a row of short spines below (see, also, *Myiolepta strigilata*) . . **Lepromyia**, 31
Body not tomentose; all the femora not thickened and not with spines below **10**
10.—Face tuberculate below, partly or wholly yellow; epistoma receding; face and front not wrinkled (plate i, figs. 7–9) . . . . . **Paragus**, 17
Epistoma projecting; front and face with transverse wrinkles (plate ii, figs. 6–9) . . . . . **Chrysogaster**, 31
11.—Face black in ground color **12**
Face more or less yellow in ground color **20**
12.—Abdomen with only four visible segments; first two joints of the antennæ very short, third large, subquadrate, with a short, subterminal arista (plate i. fig. 10) . . . . . **Nausigaster**, 21
Abdomen with more than four visible segments **13**
13.—Hind femora distinctly thickened **14**
Hind femora but little or not at all thickened **15**

14.—Scutellum unusually large, nearly square; males dichoptic (plate iv, fig. 14) **Chalcomyia**, 126

Scutellum not unusually large, considerably broader at the base; males holoptic and with a facial tubercle (plate v, figs. 1–2) . . . **Myiolepta**, 127

15.—Epistoma projecting; small black species **16**

Face tuberculate, the oral margin not projecting **17**

Face rounded, pilose, not tuberculate, the oral margin not projecting (plate ii, figs. 2–5) . . . . . **Pipiza**, 22

16.—Front in female, and the face in both sexes usually, with transverse wrinkles (plate ii, fig. 10) . . . . . **Chrysogaster**, 31

Face and front not wrinkled; face pilose, without tubercle . . **Psilota**, 30

17.—Metallic green, metallic green and black, or black species; abdomen oval, never with entire shining cross-bands (plate iii, figs. 1–5) . . . **Chilosia**, 38

Black with more or less metallic green or blue, with yellow or yellowish abdominal markings, or if not, at least with entire shining cross-bands; abdomen usually elongate **18**

18.—Wings not longer than the abdomen; ocellar tubercle large; abdomen depressed, long elliptical, somewhat narrowed toward the base, the lighter markings ferruginous or orange-yellow (plate iii, fig. 13) **Pyrophæna**, 54

Wings longer than the abdomen, usually more slender species, abdominal cross-bands yellow or greenish yellow, or sometimes shining metallic . . **19**

19.—Front tibiæ, distally, and tarsi of the male dilated, those of the female a little widened (plate iii, figs. 10–12) . . . . . **Platychirus**, 56

Front tibiæ and tarsi slender in both sexes . . . . . **Melanostoma**, 46

20.—Dorsum of thorax with yellow lateral stripes **29**

Dorsum of thorax not with yellow lateral stripes **21**

21.—Abdomen narrowed toward the base, in outline club-shaped or spatulate . **22**

Abdomen oval or slender, not spatulate or club-shaped **24**

22.—Hind femora slender; abdomen elongate, slender toward the base; front of female long, narrow above (plate iv, figs. 7–9) . . . . . **Baccha**, 116

Hind femora thickened **23**

23.—Epistoma produced anteriorly, in profile deeply concave from antennæ to oral margin; third joint of antennæ rounded (plate iv, figs. 11, 12 **Sphegina**, 113

Epistoma produced more downward, in profile gently concave; third joint of antennæ not rounded (plate iv, fig. 10) . . . . . **Neoascia**, 111

24.—Abdomen with definite yellow cross-bands, interrupted or entire **25**

Abdomen not with definite yellow cross-bands **32**

25.—Hind femora extraordinarily thickened . . . . . **Syritta**, 239

Hind femora slender **26**

26.—Sixth abdominal segment in the male as long as the two preceding together, cylindrical (plate iii, fig. 14); fifth segment in the female one-half as long as the preceding . . . . . **Eupeodes**, 64

Sixth segment not peculiar; the fifth segment in the female one-third or one-fourth as long as the preceding **27**

27.—Front very convex; eyes of male with an area of enlarged facets above (plate iv, fig. 1) . . . . . **Catabomba**, 62

Front not remarkably convex **28**

28.—Third longitudinal vein with a distinct curvature into the first posterior cell; third joint of antennæ elongate oval (plate iv, fig. 4) . . . . **Didea**, 89

Third longitudidal vein straight or gently curved . . . . . **Syrphus**, 66

29.—Dorsum of thorax with a median cinereous line . . . . . **Mesograpta**, 98

Dorsum without such line **30**

30.—Eyes of male with an area of enlarged facets above; fourth segment of abdomen with two median yellow stripes and an oblique side spot **Allograpta**, 96

Eyes of male not with an area of enlarged facets above; fourth abdominal segment not so marked 31

31.—Face projecting below; slender species (plate iv, fig. 16) . **Sphærophoria**, 104

Face receding below; adomen oval, at least not slender **Xanthogramma**, 91

32.—Abdomen oval, black, basal portion light-colored; thickly pilose species (plate iii, fig. 6) . . . . . **Leucozona**, 61

Thinly pilose species, not so marked 33

33.—Hind femora thickened 34

Hind femora slender 37

34.—Species wholly or chiefly reddish or lutescent 36

Black species, sometimes with luteous spots on face, humeri, basal angles of abdomen, etc 35

35.—Scutellum unusually large, nearly square in outline; males dichoptic **Chalcomyia**, 126

Scutellum not unusually large, considerably broader at the base; eyes of male holoptic . . . . . **Myiolepta**, 127

36.—Face carinate; abdomen oval (plate v, figs. 5–7) . . . . . **Brachyopa**, 131

Face produced, obtusely tuberculate (plate v, fig. 4) . . **Eugeniamyia**, 130

37.—Epistoma produced into a long porrected snout (plate v, fig. 3) . **Rhingia**, 129

Epistoma not at all produced. (See, also, *Baccha*, 116.) . . . . **Chilosia**, 38

38.—Third longitudinal vein bent deeply into the first posterior cell 40

Third vein not deeply bent into the first posterior cell; antennæ elongate . 39

39.—Arista feathery plumose (plate vi) . . . . . **Volucella**, 134

Arista very densely plumose, appearing like a solid mass . **Copestylum**, 151

40.—Hind femora with sharp tooth-like projection below near the outer end; large species (plate xii, fig, 2) . . . . . **Milesia**, 254

Hind femora without tooth-like projection below 41

41.—Frontal triangle of male strongly protuberant (plate viii, fig. 8) **Doliosyrphus**, 178

Frontal triangle not protuberant 42

42.—Thorax with distinct yellow markings; femora thickened; hypopygium large (plate vii, fig. 1) . . . . . **Pteroptila**, 179

Thorax without distinct yellow markings; hind femora occasionally thickened; hypopygium not prominent . . . . . **Eristalis**, 158

43.—Arista plumose (plate vii, figs. 2–5) 44

Arista bare or pubescent 45

44.—Thinly pilose, abdomen with yellow bands . . . . . **Sericomyia**, 153

Thickly pilose, abdomen without yellow . . . . . **Arctophila**, 157

45.—Third longitudinal vein bent deeply into the first posterior cell; hind femora thickened 46

Third vein only gently curved 51

46.—Face with a sharp longitudinal ridge in the middle; hind femora with an angular protuberance below near outer end . . . . . **Tropidia**, 206

Face tuberculate or arched, not carinate 47

47.—Thorax and scutellum very densely pollinose above (plate viii, fig. 9). **Pterallastes**, 198

Scutellum not densely pollinose above 48

48.—Third joint of antennæ broad, thorax not vittate 49

Third joint oval; thorax usually vittate above . . . . . **Helophilus**, 153

49.—Thickly pilose . . . . . **Mallota**, 201

Thinly pilose 50

50.—Hind tibiæ of male with an internal median spur (plate viii, fig. 12) **Teuchocnemis**, 199

Hind tibiæ of male not with an internal median spur (plate ix, fig. 1) **Triodonta**, 205

51.—Hind femora thickened, with a bifid spur below on outer end, (plate xi, fig. 1). **Senogaster**, 238

Hind femora not with a bifid spur below 52

52.—Slender species, abdomen narrowed on basal portion . . . . . **Baccha**, 116

Abdomen in no wise club-shaped or narrowed basally 53

53.—Thorax with distinct yellow markings other than on the humeri . . . 62

Thorax not with distinct yellow markings other than rarely on the humeri 54

54.—Face transversely arched or carinate, not produced, not tuberculate; abdomen more or less elongate and nearly bare 55

More or less thickly pilose species, often large 57

55.—Hind femora extraordinarily thickened; anterior cross-vein rectangular (plate xii, fig. 1) . . . . . **Syritta**, 239

Hind femora more or less thickened; cross-vein oblique 56

56.—Face sharply carinate (plate ix, fig. 2) . . . . . **Tropidia**, 206

Face transversely arched (plate ix, figs. 5–8) . . . . . **Xylota**, 224

57.—Scutellum, margin of the thorax, and the pleuræ with bristly hairs (plate xi, fig. 5) . . . . . **Chrysochlamys**, 240

Thorax wholly without bristles 58

58.—Face short, not produced, concave from antennæ to tip, not tuberculate; hind femora thickened 59

Face produced, longer than the front 60

59.—Abdomen elongate . . . . . **Brachypalpus**, 221

Abdomen very broad, thorax densely pilose, very large species (plate x, fig. 7) **Pocota**, 220

60.—Face produced forward, pointed, concave from antennæ to tip, not tuberculate, sub-carinate; hind femora thickened (plate x, figs. 4–6) . **Crioprora**, 217

Face not evenly concave, tuberculate or convex 61

61.—Third joint of antennæ produced above into a conical process, terminating in the thickened arista (plate xi, fig. 2) . . . . . **Merapioidus**, 243

Third joint of antennæ obliquely oval; hind femora rarely thickened* (plates ix, x) . . . . . **Criorhina**, 209

62.—Hind femora with a conical, tooth-like protuberance below, near the end (plate xii, figs. 3–5) . . . . . **Spilomyia**, 224

Hind femora without such protuberance 63

63.—Antennæ inserted low down, near the middle of the head in profile; face not longer than the front (plate xii, figs. 6–7) . . . . . **Temnostoma**, 249

Antennæ situated high up, on a conical process, front short, face much produced downward; antennæ long or short (plate xii, fig. 8) . **Sphecomyia**, 258

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* If thinly pilose, with the abdomen nearly bare, and the hind femora thickened, see *Xylota tuberans*, p. 225.

PART II.

DESCRIPTIONS.

PART II.—DESCRIPTIONS.

MICRODON.

Microdon Meigen, in Illiger's Magazine, ii, 275, 1803.
Aphritis Latreille, Hist. Nat. Crust. et Ins., xiv, 1804.
Ceratophya Wiedemann, Auss. Zw. Ins., ii, 79, 1830.
Dimeraspis Newman, Ent. Mag., v, 372, 1838.
Mesophila Walker, List, etc., iv, 1157, 1849.
Ubristes Walker, Insecta Saunders., 217, 1856.

Rather large, nearly bare species, usually short, thick-set, with short wings. Head flattened, broad; the face rounded, pilose, not descending much below the eyes. Antennæ porrect, approximate at their base, elongate, divergent on outer part; first joint elongate, slender; second joint the shortest; third spindle-shaped, as long or longer than the first; arista short, basal, bare. Eyes usually bare, rarely pilose, broadly separated in the male, but less so than in the female. Thorax short, broad, convex. Scutellum large, flat or gently convex, often with a spine or tubercle on each posterior angle. Abdomen usually short and broad, turned downward, very convex, nearly bare. Legs short, rather stout, tibiæ usually somewhat dilated; tarsi more or less dilated; the metatarsi elongated, especially the hind pair, which are sometimes extraordinarily dilated. Wings short, small; third vein nearly straight, first posterior cell long petiolate, with a stump of a vein projecting into it from the third vein, near its middle; last section of fourth vein, and the vein closing the discal cell, often with a stump of a vein on the inner side. Type of genus *M. mutabilis* Linné, Europe.

TABLE OF SPECIES.

1.—Slender, elongate species; antennæ short 2
Short, thick-set species 3
2.—Third joint of the antennæ a little shorter than the first two together; wings distinctly fasciate . . . . . **baliopterus**
Third joint a little longer than the first two together, wings indistinctly fasciate . . . . . **coarctatus**
3.—Hind metatarsi not, or but slightly, incrassate 4
Hind metatarsi strongly incrassate in the male 5
4.—Posterior part of the abdomen bright orange-yellow . . . . . **pulcher**
Abdomen without orange-yellow . . . . . **tristis**
5.—Third joint of the antennæ longer than the first . . . . . **fuscipennis**
Third joint not longer than the first . . . . . **globosus**

For other species see descriptions.

Microdon fuscipennis. (Plate I, figs. 1, 1*a*.)

Ceratophya fuscipennis Macquart, Hist. Nat. Dipt., i, 488, 3.
Microdon Agapenor Walker, List, etc., iii, 539.
Mesophila fuscipennis Walker, List, etc., iv, 1157.

Habitat.—Virginia, Florida!,* Texas (O. S.).

♂. Length, 6 to 8mm. Head ferruginous red, clothed with yellowish white pile; in profile gently gibbose on the lower part of the face. Front broad, the distance from the ocelli to antennæ a little less than the least distance between the eyes; ocelli approximate. Antennæ red, elongate, the first joint considerably shorter than the two following together; second joint short; third joint a little longer than the first, obtuse at the tip, brownish on the distal part. Thorax red, the dorsum with three broad black stripes, the lateral ones abbreviated in front; clothed with short, light yellow pile. Scutellum large, plane, trapezoidal in shape, the length of the distal border not as great as the sides; very distinctly emarginate, the pile rather shorter than on the thorax. Abdomen short, broad, globose, brownish red, the pile short, light yellow. Legs red, the femora, except the tip, and sometimes a ring on the tibiæ, and the hind metatarsi, black; hind metatarsi longer than the remaining joints together, extraordinarily thickened and dilated. Wings tinged with blackish, especially in front and along the cross-veins; the sections of veins at outer part of first posterior and discal cells nearly straight and rectangular, somewhat deflected inward.

Three specimens, Virginia (T. Pergande), and Florida (Professor Riley).

The color probably varies more or less from red to brownish red throughout. I am not at all certain that this species is Macquart's *Ceratophyia fuscipennis*, as there is a distinct emargination on the border of the scutellum, the absence of which very character is that upon which the genus *Ceratophyia* was based.

Microdon globosus. (Plate I, fig. 2.)

Mulio globosus Fabricius, Syst. Antl., 185, 7.
Microdon globosus Wiedemann, Auss. Zw. Ins., ii, 86, 11 (translation from Fabricius); Packard, Guide, etc., 398, fig. 17; Lintner, 2nd Rep., 116, fig. 24.
Aphritis globosus Macquart, Dipt. Exot., ii, 2, 13, 5; tab. i, fig. 4.
Dimeraspis podagra Newman, Ent. Mag., v, 373.

Habitat.—Atlantic States !, Michigan (Lintner).

♂, ♀. Length, 8 to 10mm. Antennæ red, somewhat blackish at the tip, the first joint a little shorter than the two following together; second joint not half as long as third; third joint pointed at the tip. Face thickly clothed with white pile; front in the male narrowed near its middle so that the distance from the ocelli to the antennæ is about twice the width; ocelli approximate; front in female as wide as the distance from ocelli to the antennæ. The color of the head is red; in profile the face is nearly parallel with the border of the eyes. Eyes

* Habitats followed by an ! are given from specimens examined.

bare. Thorax red, with three broad, indistinct, blackish stripes. Scutellum large, plane, trapezoidal in shape, the three sides nearly equal; wholly without spines or tubercles; pile short, reddish, not longer than on the dorsum of the thorax. Abdomen very short and broad, globose, brownish-red, the pile very short and whitish. Legs red, the femora more or less blackish; hind metatarsi longer than the three following joints together, very much dilated in the male. Wings brown along the front part and along the veins of the posterior part; veins at the outer part of the first posterior cell and discal cell nearly rectangular, not rounded on the posterior angles.

Numerous specimens.

Microdon pulcher, n. sp.

Habitat.—Saint Domingo!.

♀. Length, 12mm. Eyes bare. Face nearly parallel in profile with the border of the eyes, shining black with a purple reflection, clothed with not very abundant white pile. Antennæ black, the first joint not quite so long as the two others together, second joint short, not a fourth as long as the third; arista shorter than the joint. Front deep shining purplish black, with short black pile. Thorax deep shining black, with a purple or violet reflection; pile short, black. Scutellum transverse, not half as long as broad, spines small and inconspicuous, remote from each other; pile longer than on the dorsum of the thorax, nearly white. The color of scutellum and the abdomen bright purple; third segment of the latter on the sides rather narrowly, fourth segment broadly, fifth segment wholly, orange yellow, and clothed with the same colored pile; elsewhere the abdomen is clothed only with short black pile. Legs black, the last joint of all the tarsi yellowish red; all the tarsi flattened transversely, the posterior metatarsi only a little thicker. Wings dark brown, the interior of outer cells subhyaline; the last section of the veins at outer part of the first posterior and discal cells angulated and with stumps of veins.

Two specimens, Saint Domingo (G. F. Frazar).

Microdon baliopterus. (Plate I, fig. 4.)

Microdon baliopterus Loew, Centur., x, 56.

Habitat.—Texas (Lw.)!.

♂, ♀. Belongs among the species with slender body and short antennæ; fuscous bronze, moderately shining; front, thorax, and scutellum cupreous shining, abdomen greenish bronze in color, toward the sides becoming coppery; antennæ and legs testaceous, third joint of the former, and the basal half of the femora nearly wholly black fuscous; wings hyaline, veins usually broadly clouded with fuscous black. Length of body, 8 to 9mm; of wings, 6 to 7mm.

Related to *M. coarctatus*, and *lætus;* fuscous bronze, moderately shining. Front resplendent coppery, clothed with light yellow pile; face and occiput white pubescent. Eyes sub-nude. Antennæ short, saturate

reddish; third joint a little shorter than the first two together, except the base, black. Thorax coppery-shining, the purplish stripes of the dorsum sub-opaque, pile of the dorsum sub-aureous, of the pleuræ white. Scutellum coppery shining, and sub-aureous pubescent. Color of the abdomen bronze-greenish, near the lateral margin in the male more obsoletely, in the female more distinctly, coppery, margin of the last segment nearly luteous. Abdomen subaureous pubescent, on the sides near the base with white pile, near the tip with black pile. Legs saturate testaceous or fuscous red; basal half of the femora always for the great part fuscous black. Tarsi sometimes fuscous. Wings cinereous hyaline, transverse veins and the anastomoses broadly clouded with fuscous black.

Translation from original, compared with the types in the Museum of Comparative Zoology.

Microdon coarctatus.

Microdon coarctatus Loew, Centur., v, 47.

Habitat.—District of Columbia (Lw.)!.

♂, ♀. Slender, steel green, moderately shining, eyes subnude, front and face narrow, ocelli remote from the vertex, antennæ short, black, margin of the second abdominal segment tumid. Length of body 7 to 8mm, of wings 6mm.

Slender, steel green, moderately shining, white pubescent. Front of equal width, in the female a little broader than in the male, ocelli remote from the vertex. Antennæ black, short, third joint a little longer than the first two together. Dorsum of thorax bronze green, very lightly punctulate and transversely aciculate, with four obscure coppery stripes. Scutellum greenish black, the apex emarginate and on each side provided with a black tooth. Abdomen in the male cylindrical, obtuse, in the female acute; second segment a little broader than the following, the disk depressed, with the lateral margins somewhat tumid. Wings cinereous hyaline, the transverse veins clouded with black, posterior angle of the first posterior and discal cells rounded, very shortly appendiculate.

Translation from the original, compared with the two type specimens in the Museum of Comparative Zoology.

Microdon tristis. (Plate I, figs. 3, 3*a*.)

Microdon tristis Loew, Centur., v, 45.

Microdon cothurnatum Bigot, Ann. Soc. Ent. Fr., 1883, 320 (var.).

Habitat.—Virginia, New York, and northward as far as the Mackenzie River (O. S.), Connecticut, Oregon!.

♀. Black, pallidly pilose, the antennæ long and fuscous black, front very broad, scutellum bidentate, abdomen oblong-ovate, the penultimate segment subequal to the two preceding. Length of body 9mm, of the wings 6mm.

Head bronze black, clothed with yellowish white pile, front very broad, of equal width. Antennæ elongate, black-fuscous, first joint

linear, subequal to the third, testaceous at base. Thorax bronze black, obsoletely cupreous lineate, clothed with yellowish pile. Scutellum greenish black, white pilose, rather plane, with the apex emarginate and armed on each side with a minute tooth of the same color. Abdomen oblong-ovate, punctulate, black, the penultimate segment subequal to the two preceding together, with the base and lateral margins yellow pilose, and with the pile on the disk so arranged that a broadly interrupted fascia on the posterior margin of the third segment, two large separated spots on the fourth segment, two smaller subcontiguous ones on the fifth segment, clothed with white pile, are apparent. Venter yellow pilose, black piceous, with the posterior margin of each segment dilutely yellowish. Legs black piceous, base of femora, knees and basal half of hind tibiæ dilutely testaceous; tarsi neither dilated nor incrassate. Wings cinereous, clouds of the transverse veins narrowly blackish, posterior angle of the first posterior and discal cells rounded, not appendiculate.—Translation.

There is a considerable variation among the specimens which I have examined, and while, from an examination of the types in the Loew collection, I do not believe them specifically different, I deem it best to here give their descriptions.

♂, ♀. Length, 7 to 10^{mm}. Head metallic, shining green; face nearly parallel in profile with the border of the eyes, clothed with yellowish-white pile. Front, in the male, with a distinct transverse groove, in width a little less than the distance from the ocelli to the base of the antennæ, clothed with light-yellow pile; in the female the front is of the same width as the face, and the transverse depression is less distinct. Antennæ black, the first joint reddish at the base, third joint obtuse at tip, not as long as the first joint. Dorsum of thorax in the male shining brassy green, with an indistinct median stripe; in the female, more greenish blue; clothed with moderately long and abundant whitish pile. Scutellum gently convex, with an acute spine on each posterior angle; pile of the same color as on the dorsum of the thorax, a little longer and more abundant. Tegulæ white, with white pile on the margin. Abdomen more than twice as long as wide, bluish green, moderately shining, clothed with yellowish-white pile, which forms an indistinct, interrupted, transverse cross-band on the posterior part of the third segment, and two oblique spots on the fourth segment. Legs black; the tibiæ clothed with white pile; posterior metatarsi not quite as long as the remaining joints together, but little or not at all dilated. Wings only lightly tinged with blackish; the outer posterior angles of the first posterior and discal cells strongly convex.

Var. *ruficrus*, new.—A single male specimen from Connecticut seems to show a specific variation from the foregoing, but as one specimen is insufficient to decide it, I will here give the differences. The face is rather more projecting in profile below; across the front there is some

black pile; the tibiæ and tarsi are wholly reddish-yellow; and the hind tibiæ and metatarsi seem to be more dilated.

Var. *cothurnatus* Bigot.—Two females and one male from Mount Hood, Oregon, agree very closely with the first two specimens, but the third joint of the antennæ is acute, the spines of the scutellum are very small, nearly obsolete; and the tibiæ and tarsi are wholly reddish-yellow.

Microdon limbus, n. sp.

Habitat.—Florida!

♀. Length, 9mm. Black, moderately shining. Face and front broad, parallel. Face clothed on the sides with golden pile, in the middle chiefly black. Antennæ dark brownish red, first and third joints of nearly equal length, the second more than a fourth of the length of the third. Front with only a little golden pile, mostly black, short. Dorsum of thorax black, with slight coppery reflections, nearly bare. Scutellum large, with two large, somewhat approximated spines. Abdomen broadly ovate, black, but little shining, the second segment on the sides behind, and the third with a larger oblique spot on each side, white pubescent or pilose. Legs dark red, the immediate base of the femora black, very short pilose; tibiæ rather stout, and gently convex on the outer side, especially the hind pair; hind metatarsi elongate, flattened, not dilated. Wings cinereous-hyaline in the inner part of the cells; all the veins, except the base of the fourth longitudinal, with a narrow, very distinct, blackish cloud on each side, those of the last vein separated by a subhyaline interval; outer cross-vein sinuous.

One specimen, Florida (National Museum, Professor Riley's collection).

Microdon, n. sp.

Habitat.—Mexico!

♀. Length, 10mm. A single imperfect specimen from the Isthmus of Tehuantepec, in the National Museum, shows such remarkable development of the hind tibiæ that I mention it here without giving it a name. It is yellowish red throughout, the dorsum of the thorax and the metanotum black. The hind tibiæ are extraordinarily dilated, crescentric in shape, considerably thickened, and with a dense fringe of black pile; the hind metatarsi are also dilated. The vertex projects strongly.

Microdon pachystylum, n. sp.

Habitat.—Georgia!

♂. Length, 6mm. First antennal joint not more than one-half the length of the third, reddish yellow; third joint much elongate, cylindrical, obtuse, more slender in its middle portion, dark brown; arista basal, much thickened and very short. Front and face broad, of equal width, the margins parallel, clothed with short, light-yellow pile; face in profile most projecting below, brownish red, shining. Dorsum of thorax black, shining, broadly reddish on the sides; pile short, whitish. Scu-

tellum brownish red, small, oval, without spines or tubercles. Abdomen elongate oval, nearly bare, finely punctulate; second and third segments yellow; fourth elongate, black. Legs luteous yellow, the femora chiefly black; hind metatarsi elongate, somewhat thickened, scarcely dilated. Wings dark brown, less so behind. Cross-veins much inflected, sinuous, but without stumps.

One specimen, Georgia (National Museum, Professor Riley's collection). A female specimen from Texas differs in having the abdomen broadly oval, and nearly uniformly brown, the anterior segments luteous in the middle.

Microdon falcatus, n. sp.

Habitat.—Mexico!

♀. Length, 5^{mm}. Head flattened, vertex projecting, front descending. Front and face reddish yellow, shining, nearly bare. Antennæ elongate, black; first joint slender, second short, third longer than the first two together, thickened, curved falcate. Eyes bare. Thorax yellowish red, nearly bare; dorsum with three coalescent, black stripes, the outer ones abbreviated in front and behind, the middle one behind; scutellum very slightly emarginate behind. Abdomen red or brownish red, paler toward the base, very broadly oval, depressed, nearly bare. Legs black; hind tarsi scarcely dilated. Wings cinereous hyaline, strongly pubescent; the veins stout, nearly black; last section of the fourth vein inflected, posterior cross-vein sinuous.

Four specimens, Isthmus of Tehuantepec (National Museum, Professor Riley's collection.)

Microdon aurifex.

Microdon aurifex Wiedemann, Auss. Zw. Ins., ii, 85; Macquart, Dipt. Exot., ii, 2, 11, 2, tab. ii, fig. 2.

? *Microdon trochilus* Walker, Dipt. Saunders., 216.

Habitat.—Mexico!, Brazil (Wied.).

♂. Length, 10^{mm}. Bright metallic green with violaceous reflections; tip of the abdomen yellow; legs black. Antennæ blackish brown, first and third joints of nearly equal length. Face rather narrow, moderately swollen, white pilose. Front with black pile, considerably narrowed in the middle, where its breadth is less than half the distance between antennæ and ocelli. Eyes sparsely pilose. Dorsum of thorax with moderately abundant erect black pile; in front and on the sides, with sparse, light yellow pile. Scutellum large, trapezoidal, covered with light yellow pile; spines small and remote. Abdomen less violaceous than the thorax, nearly bare; first segment with yellow pile; second with an anterior opaque black cross-band; hypopygium wholly reddish yellow, not shining. Legs black, with a greenish reflection, especially on the hind pair; pile black, rather long, fringed on the outer side of the tibiæ, particularly of the hind pair; hind tarsi considerably dilated. Wings nearly uniformly cinereous; posterior cross-vein not much inflected, without stump.

One specimen, Isthmus of Tehuantepec (National Museum, Professor Riley's collection). This species must resemble *M. aurulentus*, but there are differences from Fabricius's brief description, as Wiedemann pointed out, and especially from Macquart's, who it may be supposed examined the type in Bosc's museum at Paris. It is also evidently related to *M. inequalis* Loew, but differs especially in the pile of the thorax.

Microdon scitulus, n. sp.

Habitat.—Florida!

♂. Length, 6mm. Bright metallic green and steel blue. Head hemispherical. Front and face steel blue, narrow, the former lightly emarginate on the sides, with short black pile, the least width less than the distance from anterior ocellus to base of antennæ; face but little projecting in profile, thickly white pilose; antennæ black; third joint a little longer than the first, a little broader on its outer part; arista slender. Eyes bare. Dorsum of thorax with strong steel blue reflections, thinly pilose. Scutellum subtriangular, spines moderately stout, approximate. Abdomen brilliant green, uniform, with fainter blue reflections, finely punctulate, elongate oval, on the sides with oblique spots and on the end white pubescent. Femora, except the tip, metallic green, tibiæ yellow, tarsi more luteous. Wings nearly uniformly subinfuscated; outer cross-veins rectangular and straight.

One specimen, Florida (National Museum, Professor Riley's collection). This species might be identified as *M. rufipes* Macq. were it not for the discrepancies in the pile of the eyes, face, and front.

Microdon marmoratus.

Microdon marmoratum Bigot, Ann. Soc. Ent. Fr., 1883, 320.

Habitat.—California (Bigot).

♂. Long., 9mm. *Obscurè fuscum, flavo pallido satis dense tomentosum. Antennis fulvis, apice plus minus infuscatis; fronte et facie fuscis, lateribus obscurè testaceis; abdomine utrinque, latè, plus minus fulvo tincto; pedibus fulvis, femoribus basi, annulo tibiarum, tarsorum posticorum segmento basilari, nigris; alis cinereis, apice obscurioribus, venis fusco limbatis.* ♀. *Simillima. Fronte et facie rufis.*

♂. D'un brun foncé, assez densément couvert d'un duvet velouté fauve clair, plus abondant sur le thorax; antennes d'un fauve plus ou moins foncé, souvent brunâtres vers leur extrémité; face et front bruns; thorax rougeâtre sur les côtés, écusson plus ou moins roussâtre; cuillerons et balanciers d'un testacé pâle; abdomen souvent un peu roussâtre sur les côtés; pieds fauves, base des cuisses largement noire, un anneau au milieu des tibias, et, base des tarses postérieurs, de même couleur; ailes grises, légèrement enfumées au bord externe et á l'extrémité, nervures largement bordées de brunâtre. ♀. Semblable au ♂. Face et front rougeâtres. Californie.—4 ♂, 3 ♀.—Bigot, l. c.

♂. Dark brown, densely clothed with clear fawn-colored velvety pile, more abundant on the thorax; antennæ more or less dark fawn-

colored, often brownish near their extremity; face and front brown; thorax reddish on the sides; scutellum mere or less reddish; tegulæ and halteres pale testaceous; abdomen often somewhat reddish at the sides; legs fawn-colored, base of femora largely black, a ring in the middle of the tibiæ, and the base of the hind tarsi, of the same color; wings gray, distinctly clouded on the posterior part and at the tip, veins largely bordered with brown. ♀. Like the male, face and front reddish.—Translation.

Microdon fulgens.

Microdon fulgens Wiedemann, Auss. Zw. Ins., ii, 82, 1.
Aphritis fulgens Macquart, Dipt. Exot. 1er Suppl., 122.
Microdon euglossoides Gray, in Griffith's Animal Kingdom, ii, tab. 125, fig. 2. (Walker, List, etc., iii, 538).

Habitat.—Georgia (Wied.), Florida, Guiana (Macq.).

Viridaureus, alis fuscanis. 15^{mm}, ♀.—Georgia.

Fühler schwarz. Untergesicht stahlblau, dünn gelblichweiss behaart. Mittelleib grüngolden, in gewisser Richtung erscheinen darauf fast kupferrothe Striemen. Vorflügeldreieck stahlblau. Stirn zwischen grün und stahlblau. Flügel fast rein braun, doch an den dünnen Rändern nur bräunlich; Schüppchen weiss, mit schwarz gewimpertem Rande. Beine grün oder blau.—Wiedemann.

Antennæ black. Face steel blue, thinly yellowish white pilose. Thorax green-golden, in certain reflections there appear copper-red stripes. Ante-alar callosity (Vorflügeldreieck) steel blue. Front between green and steel blue. Wings nearly pure brown, on the thin veins only brownish; tegulæ white, with a black ciliate border. Legs green or blue.—Translation.

Microdon aurulentus.

Mulio aurulentus Fabricius, Syst. Antl., 185, 8.
Microdon aurulentus Wiedemann, Auss. Zw. Ins., ii, 86, 10.
Aphritis aurulentus Macquart, Dipt. Exot., ii, 2, 12, 4; pl. ii, fig. 1.

Habitat.—Carolina (Fabr.).

Viridi æneus, auro tomentosus. Twice as large as M. globosus. Antennæ black. The entire body bronze-green, clothed with thick golden pile. Legs black.—Translation from Fabricius.

♀. Long. 8^{mm}. Face et front à poils jaunes. Antennes noires; premier article un peu plus long que dans les espèces européenes et au moins autant que les deux autres réunis. Thorax à poils jaunes; écusson et abdomen à poils d'un fauve doré plus ou moins absens; pieds noirs; jambes à duvet fauve. Balanciers fauves. Ailes brunâtres. De la Caroline. Bosc's Muséum.—Macquart.

Face and front with yellow pile. Antennae black, first joint a little longer than in the European species, and a little shorter than the two others together. Thorax with yellow pile; scutellum and abdomen with pile of a golden luteous color more or less wanting; legs black; tibiæ

describe. The lengths of the joints of the antennæ offer characters of some value, but I feel sure that they are not so reliable as some authors have supposed. In a rather large series of specimens, all apparently belonging to the same species, I find a very considerable variation in the length of the third joint, as will be seen in figure 5*a*, plate I.

TABLE OF SPECIES.

1.—The lateral margin of the third abdominal segment yellow 2
The lateral margin not yellow 3
2.—The black on the fifth abdominal segment is shaped like an inverted V. **laterale**
The black has the two posterior branches arcuate, and widely separated at the tips . . . . . **ypsilon**
3.—Arcuate bands of abdomen entire; the black spot on the fifth segment is elongated and narrow, with the branches nearly parallel . . . . **integre**
Arcuate bands interrupted 4
4.—Eastern species 5
Western species . . . . . **derivatum**
5.—Black spot of the fifth abdominal segment inverted Y-shaped . . **ventricosum**
Black spot, etc., inverted V-shaped . . . . . **pubescens**

Chrysotoxum laterale.

Chrysotoxum laterale Loew, Centur., v, 42.

Habitat.—New York!, Nebraska (Lw.).

♂. Length, 11mm. Second joint of antennæ a little longer than the first; third joint a little longer than the first two together; eyes pilose. Lateral stripes of the thorax sub-entire; the white vittulæ conspicuous. Scutellum yellow, the disk black fasciolate. Yellow fasciæ of the abdomen arcuate, very narrowly interrupted, connected with the yellow border of the lateral margins; posterior margin of each segment yellow; on the 'first' segment narrowly, on the third broadly, on the fourth strongly dilated, on the fifth produced into an oblong spot, so that between this spot and the fascia the black forms an inverted Y. Hypopygium yellow. Each of the middle segments of the venter with narrow abbreviated yellow fascia on the posterior margin. Legs wholly yellow. Wings cinereous hyaline, costa with a narrow fuscous cloud of equal width. From *C. derivatum* Walker, to which this is nearly related, it will be easily distinguished by the thoracic stripes being broader, by the margin of the abdomen being yellow, by the picture of the venter being different, and by the legs being wholly yellow.—Translation.

A single female from New York (August 25) I identify as this, but the first segment of the abdomen does not have a posterior yellow margin.

Chrysotoxum ypsilon, n. sp.

Habitat.—New Mexico!.

♂. Length, 10 to 12mm. Large. Third joint of the antennæ longer than the other two together. Scutellum on its disk dark and translucent. Arcuate bands of abdomen rather broad, connected with the yel-

low of the posterior margin behind. Margin of the abdomen from the second segment yellow; the black spot on the fifth segment is slender, forming three arms; the basal one is short, formed by the interruption of the arcuate band; the two posterior are curved outwardly, so that the distance between the tips is about the same as the length of each. Legs yellow. Wings with a narrow brown border in front.

Three specimens, New Mexico (G. F. Gaumer), from Mr. Eugene Keen.

Chrysotoxum pubescens.

Crysotoxum pubescens Loew, Wien. Ent. Monatschr., iv. 84; Centur., v. 43.

Habitat.—Illinois (Lw.), New York!.

♂, ♀. Length, 12.5mm. Second joint of the antennæ longer than the first; the third joint in the female subequal to the two preceding together; in the male longer. Eyes pilose. Lateral stripes of the thorax interrupted; the median vittulæ conspicuously whitish pollinose. Scutellum yellow, the disk black. The yellow fasciæ of the abdomen of moderate width, arcuate, interrupted, on the posterior angles of the segments connected with the posterior bands; these hind margins on the posterior segments are broader than on the anterior segments, on the last segment dilated into a triangular spot between which and the fascia the black forms an inverted V. Venter black, posterior margin of the segments yellow; the two intermediate in the male, the last three segments in the female, each with two ovate yellow spots. Hypopygium yellow. Legs yellow. Wings cinereous; near the costa, lutescent.

Translation, compared with the types. Specimens agreeing with this I have seen from New York.

Chrysotoxum ventricosum.

Chrysotoxum ventricosum Loew, Centur., v, 44.

Habitat.—District of Columbia (Lw.), Canada!

♀. Eyes pubescent, scutellum wholly yellow, abdomen globose, with fasciæ of moderate width, moderately arcuated, narrowly separated or subseparated from the lateral margin; base of the front and middle femora, and the hind femora except the tip, black. Length of body, 10mm; of the wings, 10.5mm.

Third joint of the antennæ a little longer than the other two together. Eyes pilose. Lateral stripes of the thorax interrupted Scutellum wholly yellow. Abdomen globose, fasciæ of moderate width, moderately arcuate, narrowly interrupted, usually separated from the lateral margins, and from the posterior margin, sometimes, by the luteous spot in the posterior angles, joined with them; posterior margin of the first segment with a narrow yellow band, or without it; posterior bands of the remaining segments of moderate width, the last dilated into a triangular spot, separated from the fascia by a black, inverted V-shaped spot. Last three segments of the venter each with a yellow fascia on the posterior margin. Legs yellow; base of the front and

middle femora, and the hind femora except the tip, black. Wings cinereous, along the costa fuscous.

C. ventricosum differs from *C. arcuati*, to which it is nearly allied, in the base of the abdomen being black pilose.—Translation.

I have seen a specimen from Canada which I believe belongs here.

Chrysotoxum derivatum. (Plate I, figs. 5, 5*a*, 5*b*, 5*c*.)

Chrysotoxum derivatum Walker, List, etc., iii, 542.

Chrysotoxum villosulum Bigot, Ann. Soc. Ent. de Fr., 1883, 323.

Habitat.—Hudson's Bay Territory, Alaska, Colorado Mountains (O. S.), California, Oregon!

♀, ♂. Length, 10 to 14^{mm}. Second joint of the antennæ a half or a third as long as the third; eyes pilose. Pile of thorax black and yellow. Bands of the abdomen rather slender; first band separated by a considerable distance from the border, which is not yellow; the band is usually connected with the posterior angles of the segment by a small yellow spot; third segment with the arcuated cross-band of nearly equal width throughout, narrowly interrupted in the middle, touching, or narrowly separated at the posterior angles from the yellow hind margin; the hind cross-band usually reaches quite to the lateral margin, usually slender, more or less dilated in the middle; fourth segment similar, but the arcuate band broadly connected at the outer angles with the broad hind margin; the posterior band is considerably widened at the middle, so that between the two bands there is inclosed an arched, elongated black stripe; fifth segment with the yellow inclosing an inverted V-shaped spot.

In some specimens, both male and female, the pile on the sides of the base of the abdomen is in large part black; the arcuate band of the fourth segment is entirely separated from the yellow of the hind margin. Nine specimens.

Chrysotoxum integre, n. sp.

Habitat.—Arizona!

♀. Length, 10^{mm}. Third joint of the antennæ longer than the first two together. First arcuate band of abdomen narrowly interrupted, connected with the yellow of the posterior angles, hind margin of the segment narrowly yellow in the middle; arcuate band of the third segment entire, connected with the yellow of the hind margin; anterior angles yellow, posterior marginal band angularly dilated in the middle; fourth segment similar, the arcuate band more convex, the posterior band more dilated, nearly cutting the black in two; arcuate band of the fifth segment entire, shaped like an inverted U, the yellow of the posterior margin dilated, forming an elongate narrow stripe, between which and the arcuate band the slender black forms an elongate inverted U. Legs yellow. Wings narrowly brown along the front margin.

ADDITIONAL NORTH AMERICAN SPECIES.

Chrysotoxum nigrita (Fabr.) Wiedemann, Auss. Zw. Ins., ii, 88, 2.—Jamaica.
Syrphus nigrita Fabricius, Ent. Syst., iv, 292, 49.
Mulio nigrita Fabricius, Syst. Antl., 183, 1.

Chrysotoxum flavifrons Macquart, Dipt. Exot., ii, 2, 17, 2; tab. iii, fig. 2.—Newfoundland.

It will be *impossible* to determine this species from the description given by Macquart. For this reason I consider it merely as a catalogue name, that should be dropped.

PARAGUS.

Paragus Latreille, Dictionn. d'Hist. Natur. Déterville, vol. xxiv; Hist. Nat. des Crust. et Ins., xiv, 359, 1804.

Small, nearly bare, rather short species, with the abdomen curved downward at the tip, of a black or greenish black color, with yellow on the face and usually more or less reddish on the abdomen. Head hemispherical, somewhat flattened, broader than the thorax. Antennæ about as long as the head, directed forward; first and second joints short, third longer than the first two together, rather slender, arista before the middle, bare. Face in profile somewhat projecting below, convex, with an obtuse tubercle. Eyes pilose, narrowly contiguous in the male. Abdomen as wide as the thorax and of nearly equal width throughout, gently convex above, twice or more as long as the thorax, with a shallow transverse depression on each segment, the distal end bent downward. Legs moderately slender, the hind metatarsi much thickened, as long as the remaining joints together. Marginal cell of wing open; third longitudinal vein straight, anterior cross-vein near the base of discal cell, the last section of fourth vein sinuate, terminating in the third vein in nearly a right angle, at a considerable distance before the tip.

TABLE OF SPECIES.

1.—Scutellum with a yellow border; face of male without a black median stripe; front of female narrow above . . . . . **bicolor**
Scutellum without a yellow border; face in both sexes with a black median stripe; front in female of nearly equal width **2**
2.—Abdomen with more or less red on the dorsum **3**
Abdomen wholly greenish black . . . . . **angustifrons**
3.—Vertical triangle in male large . . . . . **tibialis**
Vertical triangle not unusually large . . . . . **dimidiatus**

Paragus angustifrons.
Paragus angustifrons Loew, Centur., iv, 64.

Habitat.—Atlantic States!

♀. Length, 5mm. Head shining, somewhat metallic black, front narrow, immaculate, face nearly perpendicular, but very little proje[illegible].

yellow on the sides. Antennæ black, third joint reddish below. Pile of the face white, of the front blackish, of the vertex luteous. Dorsum of thorax clothed with very short, sublutescent pile, in front obsoletely cinereous bilineate. Scutellum of the same color as the thorax, the extreme apex testaceous. Abdomen wholly greenish black, white pubescent. Legs yellow and ochraceous varied; femora, on the basal half of the front and middle pairs, and the hind tarsi, except the tip, black; tip of hind tibiæ and the hind metatarsi fuscous. Wings hyaline; stigma luteous.—Translated from original.

A single female specimen from Professor Riley agrees almost perfectly with this, except that the dorsal stripes of the thorax are very distinct, a character, however, that is very variable in species of this genus. I can see no structural differences between this and *P. bicolor*.

Paragus bicolor. (Plate I, figs. 7, 9.)

Syrphus bicolor Fabricius, Entom. Syst., iv, 297, 71, 1794.
Mulio bicolor Fabricius, Syst. Antl., 186, 10.
Paragus bicolor Latreille, Gen. Crust., xiv, 359; Meigen, Syst. Beschr., iii, 178, 2 (var.); Macquart, Hist. Nat. Dipt., i, 565, 2 (var.); Zetterstedt, Dipt. Scand., ii, 849, 1 (var.); Schiner, Verh. Zool. Bot. Ges., vii, 301; id. Fauna Austr., i, 259.
Paragus testaceus Meigen, Syst. Beschr., iii, 180, 6 (var.).
Paragus arcuatus Meigen, l. c., iii, 179, 3 (var.).
Paragus punctulatus Zetterstedt, Dipt. Scand., ii, 850, 2.
Paragus tæniatus Meigen, l. c., iii, 179, 4 (var.).
Paragus ruficauda Zetterstedt, l. c., 852, 5.

Habitat.—North America, Europe!.

♂ ♀. Length, 4 to 6mm. Eyes with a distinct vertical glabrous stripe. Face of male wholly pure light sulphury yellow, the oral margin and cheeks shining black; in the female there is a shining black stripe reaching from the antennæ to the oral margin. Antennæ blackish; the under side of the third joint red. Front of the female narrowed above, so that at the vertex it is not more than half as wide as at the base of the antennæ; shining black, lightly dusted on the sides below; frontal triangle yellow, the eyes scarcely touch each other at a point midway between the ocelli and base of the antennæ; vertical triangle black, light pollinose in front. Thorax black, a little shining, with light yellowish pile, in front with two whitish pollinose stripes. Pleuræ silvery white pilose. Scutellum with a whitish yellow border, not extending to the anterior angles. Abdomen chiefly red, but variable in color; first segment, black; second segment, often wholly black, sometimes more or less red behind, sometimes only black on the sides. The black usually extends narrowly along the sides of the third segment, sometimes of the fourth and fifth also; rarely the third segment has a blackish band. Pile on the sides of the segments in front and on the lateral margins, and on the fifth segment, white, elsewhere obscure. Legs variable, frequently the basal portion of the front and middle femora, and the hind femora except the tip, are black; sometimes,

also, there is a black ring on the hind tibiæ, and the hind metatarsi also black; often the black is wholly wanting, the legs are then yellowish red with the tip of the femora and the base of the tibiæ light yellow. Wings, nearly hyaline; stigma, dilutely yellow.

Ten specimens from Montana (Professor Comstock); one from Garland, Colo. (Professor Riley); one from Como, Wyo.; two from Washington Territory; one from Southern California; and four from Connecticut. The species is very variable. In Europe there has been much confusion, as will be seen from the list of synonyms, which I have reproduced from Schiner. To this author our knowledge of the variations is chiefly due, and hence the following translation of his description and remarks will be valuable: "Abdomen black; in the middle in greater or less extent, yellowish red. When the black is confined to the base of the abdomen, the first segment, at least, is always black, or, in the middle behind, there may be a small red spot, and the black color does not here appear spotted. Ground color metallic black or dark bronze green. Dorsum of thorax with two median stripes reaching nearly to the middle, sometimes wholly wanting. Antennæ brown. Abdomen, except the base, wholly yellowish red (var. *testaceus*); or yellowish red with the base and tip black, and on the third and fourth and fifth segments with white pilose arcuated spots (var. *arcuatus* and *bicolor*); or with these pilose spots wanting (var. *taeniatus*); or the reddish color is confined to tip (var. *ruficauda*), in which case the scutellum is wholly black. The legs are yellow with the base of the femora black, sometimes with a black ring on the hind tibiæ, and with darkened meta tarsi.

"A careful examination of my rich material has given me no better results than the above. It is difficult to believe that the long, slender varieties, four millimeters in length, and the robust specimens, six millimeters in length, should belong to one and the same species, and yet we find between these extremes, numerous connecting forms. The color has no value, plastic differences are wholly wanting; specimens occur in which differences of neuration exist in the two wings of the same individual.*

"Specimens have been taken in copula of *P. bicolor* and *P. testaceus*, *P. testaceus* and *P. tæniatus*." †

Paragus tibialis. (Plate I, fig. 8.)

Pipiza tibialis Fallen, Dipt. Suec. Syrph., 60, 5.
Paragus hæmorrhous Meigen, Syst. Beschr., iii, 182, 10.
Paragus æneus Meigen, l. c., 183, 11; Zetterstedt, Dipt. Scand., ii, 854, 8.
Paragus obscurus Meigen, l. c., 183, 12.
Paragus tibialis Meigen, l. c., 183, 13; Zetterstedt, Dipt. Scand., ii, 852, 6.
Paragus femoratus Meigen, l. c., 184, 14.
Paragus triangulifer Zetterstedt, Dipt. Scand., ii, 853, 7.
Paragus sigillatus Curtis, Brit. Ent., 593.

* Fauna Austr. i, 259. † Verh. Z. B. Ges., vii, 301.

Paragus nigritis Gimmerthal. Bull. d. Moscou, xv, 668.
Paragus albipes Gimmerthal, l. c.
Paragus dispar Schummel, Arb. u. Veränd. d. Schles. Ges., 1842, 163.
Paragus coadunatus Rondani, Nuovi Ann. d. Sc. Nat. di Bologna, 1847, 182, 10.
Paragus tibialis Schiner, Fauna Austr., i, 257.
Paragus auricaudatus Bigot, Annales Soc. Ent. Fr., 1884, 540.

Habitat.—Europe, North America!.

♂ ♀. Length, 3 to 5mm. Very variable in size and color in the numerous varieties, between which there are frequent connecting forms. Wholly black or black green (var. *obscurus*, *femoratus*, and *tibialis*), or black with the tip of the abdomen reddish yellow (var. *hæmorrhous* and *æneus*), or black with reddish yellow triangular spot on the third segment (var. *triangulatus* and *sigillatus*), or black with the last three segments yellowish red, the antepenultimate one, however, wholly or partly black. Antennæ as long as the head, or somewhat shorter, at the base usually blackish brown, the third joint of the same color, often lighter below, and sometimes on the under side yellowish brown. Face on the sides yellow, in the middle broadly shining black, on the lower part somewhat projecting, and a small but distinct tubercle above the oral margin. Legs light yellow, black on the base of the femora; sometimes the black comprises the whole of the hind femora, except the tip; sometimes also the hind tibiæ have a black or brown ring, or their tip is brown. Scutellum wholly black. Wings hyaline, slightly grayish yellow tinged.—Translation from Schiner, Fauna Austriaca.

I have several specimens from New England and California, in which I can detect no difference from specimens from Europe.

Paragus dimidiatus.

Paragus dimidiatus Loew, Centur., iv, 63.

Habitat.—District of Columbia (Lw.)!

♂, ♀. Length, 3 to 4.25mm. Shining black-green; scutellum without yellow. Face yellow, moderately projecting, with a median stripe in both sexes. Legs yellow and ochraceous; basal half of femora black. Three segments of abdomen in the male ochraceous red. Wings hyaline; stigma very dilutely subfuscous. Very similar to *P. tibialis*, var. *hæmorrhous*, but the vertical triangle is less broad, the face less projecting, and the pile of the whole body somewhat shorter. Third antennal joint sordid reddish below. Abdomen of the female wholly black-green, of the male with the first two segments black-green, the following ones ochraceous red. As the picture of the abdomen in *P. tibialis* is very variable it is probable that the same variability may be found in this species.—Translation from original.

The structural differences given for this species may justify its separation from *P. tibialis*, but in the examination of a considerable material which I have compared with specimens of this latter from Europe I have not been able to satisfy myself of differences sufficient to justify specific separation.

NAUSIGASTER.

Nausigaster Williston, Trans. Amer. Ent. Soc., xi, 33, 1885.

Moderate sized, nearly bare species, black in ground-color, but thickly pollinose, with shining, numerous small black punctulate spots. Head spheroidal, broader than the thorax. Eyes bare, contiguous in the male. Front narrowed above, evenly arched to the antennæ, which are situated a little above the middle of the head in profile. Face narrowed below, concave on upper part below the antennæ; the tubercle near the middle large, obtuse, below it much receding to the oral margin, resembling in structure the species of *Paragus*, but more concave above the tubercle and more receding below it, the tubercle being higher up. Cheeks narrow. First and second joints of the antennæ extremely short, so that the third joint appears sessile, the latter thickened, large, subquadrate, as broad as long, the angles rounded, and narrower on the basal portion; arista small, bare, very short, not as long as the third antennal joint, remote from the base, situated upon the anterior rounded angle near the end of joint. Scutellum small, convex, but thinned along its margin. Abdomen very convex above, beyond the middle being in cross-section two-thirds of a circle; first segment short; second segment moderately long; third segment much shorter than the second in the middle, on the sides about as long, the incisure in front forming a deep stricture, less evident behind; fourth segment very large, as long as the three preceding together, forming half of an ellipsoid, flattened on one side, the strongly convex end extending beyond the anal opening, and wholly concealing the following segments. The sides of the abdomen are directed downward and inward, inclosing toward the outer part of the venter a deep cavity, shallower on the second and third segments; at the posterior part of this cavity, and concealed by the posterior rim, is the anal opening looking obliquely forward; back of the anus on the rim on each side is a small obtuse membranous flap or process. Hypopygium small, wholly concealed. Legs as in *Paragus*—rather short and moderately strong, the hind metatarsi thickened. Wings more like those of *Syritta* than of *Paragus*. The first longitudinal vein joins the costa a little before the tip of second vein, and then by a curve at the tip, so that the vein runs parallel to the costa for some distance. The anterior cross-vein is near the basal third of discal cell, and the third vein beyond is gently bisinuate. The last section of the fourth vein is sinuate like it is in *Syritta*, but more deeply so, the vein terminating very near the costa, but forming nearly a right angle at its juncture.

Type of genus, *N. punctulata* Williston, N. America.

Nausigaster punctulata. (Plate I, figs. 10, 10*a*.)

Nausigaster punctulata Williston, Trans. Amer. Ent. Soc., xi, 34; pl. ii, fig. 15.

Habitat.—New Mexico, California, Mexico!

♀. Length, 12mm. Black, moderately shining, everywhere, except on legs and venter, covered with whitish pollen, which, when not [illegible],

leaves very numerous, nearly contiguous circular black spots, more abundant on the thorax; on the dorsum of thorax and abdomen the ground color of the moderately shining punctulate black surface may be in large part denuded. In the middle of the thoracic dorsum is a pair of indistinct, less pollinose stripes. Antennae wholly yellowish red; the cheeks and the lower part of the face obscurely yellowish, in the middle of the face below the antennæ there is an oval space which is evenly pollinose, free from the black dots. Wings hyaline, with two conspicuous blackish spots; the larger one beginning in the subcostal cell at tip of auxiliary vein, thence more broadly along the marginal cell, the base of the submarginal cell for a third of its length, and less distinctly opposite this on the cross-vein and base of first posterior cell; the smaller spot reaching from the tip of the first longitudinal vein nearly to the third; veins black, brown toward the base. Legs yellowish red; the front femora on basal half, and the other femora, except the tips, black; the front and hind tarsi brown.

♂. Five male specimens have the dorsal stripes more apparent, there being three with two others between them less apparent; the legs are darker, the tarsi blackish; the wings are hyaline, except a small blackish spot on the stigma reaching across to the third vein.

One female, New Mexico (Morrison), and five males, California (Coquillett).

Since writing the above I have received a number of specimens, both male and female, from Mr. Coquillett, of California, and I find them all agreeing with the males above described. They are all smaller than the type specimen, and differ in the wings having only the one spot, instead of two, as in the original female. A male specimen in the National Museum, from the Isthmus of Tehuantepec, has the abdomen narrower, with coppery reflections where denuded. Both the legs and the spots on the wings are darker than in the type, and the latter are connected through nearly the whole length of the submarginal cell.

PIPIZA.

Pipiza Fallen, Dipt. Succ. Syrph., 36, 1816.
Neriugma Rondani, Dipt. Ital. Prodr., i, 33, 1856.
Pipizella Rondani, Dipt. Ital. Prodr., ii, 136, 1857.
Chrysodon Egger, Verh. Zool. Bot. ges., xv, 573, 1865.
Pipiza Phillips, Verh. Zool. Bot. ges., xv, 741, 1865.

Dark metallic green, or black, small or moderate-sized species, thinly pilose and finely punctulate, without yellow or light markings, except on legs and sometimes a basal band on the abdomen. Head as broad or somewhat broader than the thorax. Antennæ not longer than the head, the third joint rounded, elliptical or a little elongate, the arista basal, bare. Face flattened, receding, transversely arched, without tubercle, [illegible], clothed with pile, usu-

formly metallic green or black. Eyes contiguous in the male, pilose. Thorax short, broad. Scutellum with an acute margin, without tubercles or spines. Abdomen about three times as long as the thorax, in its middle as broad; the segments shallowly grooved transversely. Legs not very strong, the hind femora sometimes a little thickened; hind metatarsi often somewhat thickened, always shorter than the remaining joints together. Wings rather short and broad; marginal cell open, third vein nearly straight, or gently convex, anterior cross-vein before the middle of the discal cell, first posterior cell briefly or rather long petiolate, the vein at outer part of first posterior and discal cells often bent or angulated. Type of genus, *P. noctiluca*, Linné.

TABLE OF SPECIES.

1.—Abdomen with a basal interrupted yellow fascia	2
Abdomen uniformly black	3
2.—Wings with a brown spot in the middle	festiva
Wings without a brown spot in the middle	femoralis
3.—Third joint of antennæ at least twice as long as wide	4
Third joint scarcely twice as long as wide, or rounded	5
4.—Third joint of antennæ elongate; hind metatarsi much thickened; last section of fourth vein bent near its middle	pulchella
Third joint elliptical, hind metatarsi but slightly thickened; last section of fourth vein bent at its antepenultimate third	pistica
5.—Black pilose	nigripilosa
Chiefly light pilose	6
6.—Wings with a brownish cloud	7
Wings without such cloud	pisticoides
7.—Abdomen chiefly light pilose	albipilosa
Abdomen chiefly black pilose	puella

For additional species, north of Mexico, see descriptions. *P. pubescens, P. modesta, P. calcarata, P. salax, P. nigribarba, P. fraudulenta.*

Pipiza pubescens.

Triglyphus pubescens Loew, Centur., iv, 61.

Habitat.—Wisconsin (Lw.)!

♂. Black-green, clothed with rather long dilutely lutescent pile. Hind tibiæ black pilose; the knees, base of front tibiæ, and the tarsi, except the tip and metatarsi of the front and hind pairs, yellowish. Length, 4^{mm}.

Black-green, shining, wholly clothed with rather long pile. Pile of the face white; of the front near the antennæ very dilutely lutescent; on the angle of the front above, and on the vertex, black. Antennæ black, rather long, the third joint oblong, below obscurely reddish. Pile of the thorax and scutellum lutescent. Pile of the abdomen lighter than on the thorax, near the end whitish, on the posterior margins of the second and third segments black. Legs greenish-black, pallidly pilose, the hind tibiæ black pilose above. Knees and base of front and middle tibiæ dilutely lutescent; front tarsi black, with the first joint fuscous

except its base, second joint dark luteous, middle tarsi dilutely luteous, the third joint subfuscous, the last two joints black, hind tarsi black, the metatarsi moderately thickened, their tip and the two following joints dilutely luteous. Tegulæ white. Halteres light yellowish. Wings cinereous hyaline; stigma subfuscous, spurious vein nearly obsolete, except its node.

Translation, compared with the type specimen in the Cambridge Museum.

Pipiza modesta.

Triglyphus modestus Loew, Centur., iv, 62.

Habitat.—New York (Lw.)!

♀. Blackish steel-colored, clothed with short white pile; hind tibiæ white pilose; knees, base of tibiæ, and the tarsi, except the tip and the front and hind metatarsi, light lutescent. Length, 5.5mm.

Blackish steely, moderately shining, clothed with short white pile; with four obscure dorsal lines. Front rather broad, shining, with a triangular white pollinose spot on each side; pile rather long, on the lower half and on the vertex white, on the upper half black. Antennæ rather long, black, third joint oblong ovate, below obscurely reddish. Dorsum of thorax and scutellum briefly white pilose. Abdomen delicately punctulate, shining, short white pilose. Legs black, the short pile white, hind tibiæ white pilose above; knees, base of hind tibiæ, and the basal half of the front and middle pairs, dilutely lutescent; first joint of the front tarsi fuscous, tip lutescent, second joint dilutely luteous, remaining joints black; first two joints of the middle tarsi dilutely lutescent, third subfuscous, last two black; first joint of hind tarsi moderately thickened, black, tip luteous, second joint dilutely luteous, third more obscure, fourth and fifth black. Tegulæ white. Halteres dilutely yellowish. Wings hyaline; stigma subfuscous.

Translation, compared with the type specimen in the Loew collection.

Pipiza calcarata.

Pipiza calcarata Loew, Centur., vi, 42.

Habitat.—New York (Lw.)!

♂. Bronze-black, white pilose, frontal triangle and the face wholly black pilose; antennæ black, below reddish. Legs black, the knees, front tibiæ, except a blackish ring, basal half of the middle tibiæ, first three joints of the front and middle, and second and third of the hind tarsi, luteous, hind coxæ with a slender process. Wings cinerescent, except the basal third. Length of body 6.5mm; of wings 6mm.

Bronze-black, moderately shining, white pilose. Pile of the eyes whitish, in some lights blackish or black. Pile of the frontal triangle and of the face wholly black; antennæ black, below reddish, third joint oblong; pile of abdomen very short, black, on the lateral margins and the usual metallic spots longer, white; legs black; front tibiæ, ex-

cept a blackish ring. basal half and extreme tip of the middle tibiæ, first three joints of front and middle tarsi, and the second and third joints with the tip of the first of the hind tarsi luteous: hind coxæ armed with a slender process, dilated and compressed toward the end: hind metatarsi a little incrassate. Wings, except the basal third, cinereous, stigma subfuscous, small cross-vein from the base of the discal cell, and the last section of the fourth vein from the margin of the wing, less remote than in *P. nigribarba*, *P. fumipennis*, etc.—Translation of original.

Type specimen compared. The singular long, slender process on the hind coxæ will at once render the species distinguishable.

Pipiza salax.

Pipiza salax Loew, Centur. vi, 39.

Habitat.—Pennsylvania Lw.!

♂. Black-bronze, white pilose: frontal triangle, anterior half of the vertical triangle and posterior margin of the eyes black pilose: antennæ black, below red: legs black, the knees, base of front tibiæ, the middle tibiæ, except a fuscous preapical ring, and the basal joints of the front tarsi, luteous. Wings, except the basal third, luteous cinereous. Length 6.5mm; of wings 5.5 to 6mm.

Black-bronze, moderately shining, white pilose: eyes clothed with minute black pile, below with white pile: frontal triangle, and the vertical triangle, except the posterior part, black pilose: antennæ black, below obscurely reddish: third joint oblong ovate: occiput white pilose, posterior margin of the eyes black ciliate: abdomen briefly black pilose, the first segment, the lateral margins of the remaining segments, the usual metallic spots, and the posterior part of the fourth segment white pilose: hypopygium much longer than in other species: legs black, the knees, basal third, or half of the front tibiæ, middle tibiæ, except a very broad preapical ring, first joint of the front tarsi and first two joints of the middle tarsi, luteous, second joint of the front tarsi usually reddish; hind metatarsi a little thicker than the following joints. Wings cinereous, basal third more purely hyaline, stigma subfuscous.

Type specimen compared.

Pipiza nigribarba.

Pipiza nigribarba Loew, Centur., vi, 40.

Habitat.—New York (Lw.)!

♂ Black-bronze, white pilose; frontal triangle and face black pilose; antennæ black; legs black, the knees, base of front tibiæ, first three joints of middle tarsi and the intermediate joints of front and hind tarsi luteous, first joint of hind tarsi strongly incrassate; wings, except the basal third, cinereous, the last section of the fourth vein angulated. Length of body 7mm; of wings 6.5mm.

Black-bronze, moderately shining, white pilose. Eyes thickly clothed with blackish pile; frontal triangle and the anterior half of the vertical triangle black pilose. Antennæ black; third joint oblong, on the

inner side near the base obscurely red. Face black pilose, above (except the sides) white pilose. Occiput briefly white pilose, posterior margin of the eyes black ciliate; pile of abdomen black, very short; on first segment, and lateral margins of each segment, except the anterior angles and the usual metallic spots, with white and longer pile. Hypopygium short. Legs black; the extreme base of the hind tibiae, and the basal half of the front pair, luteous; front tarsi fuscous, tip of the first joint, and second joint, luteous, last two joints fuscous black; hind metatarsi strongly thickened, black, the extreme tip luteous, the two following joints luteous, last two with the tip of the preceding black; hind tibiæ clothed with rather long white pile above. Wings, except the basal third, cinerescent; stigma subfuscous, the last section of the fourth vein broken in an angle.—Translation, compared with the type specimen.

Pipiza fraudulenta.

Pipiza fraudulenta, Loew, Centur., vi, 41.

Habitat.—Illinois (Lw.)!

♂. Black-bronze, with white pile, frontal triangle and the face black pilose; antennæ black. Legs black; the knees, base of front tibiæ, first three joints of the middle tarsi and the intermediate joints of the other tarsi luteous, hind metatarsi strongly incrassate; wings, except the basal third, cinerescent, last section of the fourth vein bent, not angulated. Length of body 6.5^{mm}; of wings 6^{mm}.

Very similar to *P. nigribarba*, but the antennæ are wholly black, the hind tibiæ with long black, not white, pile above, and the last section of the fourth vein is bent, not broken into an angle.

Type specimen compared. I doubt the validity of this species.

Pipiza femoralis.

Pipiza femoralis Loew Centur., vi, 38.

?*Pipiza radicum* Riley, 1st Rep., 121, fig. 66; Amer. Ent., i, 83.

Habitat.—Illinois (Lw.) Pennsylvania!.

♂. Bronze-black, pallidly pilose, fascia of the second abdominal segment narrowly interrupted; tip of femora, the tibiæ and tarsi, luteous, the tip of the latter more obscure; wings cinereous hyaline, stigma dark ochraceous. Length 8^{mm}; of wings 7.5^{mm}.

Bronze-black, moderately shining, pallidly pilose. Eyes briefly white pilose; face white pilose. Antennæ rather large, two basal joints reddish ochraceous, third black, near the base obscurely red; arista black, pallid near the base. The luteous fascia of the second abdominal segment broad and moderately arcuated, divided by a black line, and separated from the lateral margin by a black border. Pile of the abdomen short, pallid, near the base of the abdomen longer and white, between the yellow fascia and the posterior margin of the second segment, black. Femora, except the luteous tip, bronze-black; tibiæ luteous, the hind pair near the tip obsoletely annulate with fuscous; tarsi lute-

ous, penultimate joint of the hind pairs black, of the front pair fuscous, terminal joints of the hind pair fuscous, of the front and middle pairs ochraceous or subfuscous. Wings cinereous hyaline, basal third more purely hyaline, stigma ochraceous subfuscous.

Two specimens from Pennsylvania (E. L. Keen).

Pipiza festiva. (Plate II, fig. 4.)

Pipiza festiva Meigen, Syst. Beschr., iii, 243, 2; Schiner, Fauna, etc., i, 262.
Pipiza ornata Meigen, Syst. Beschr., iii, 243, 3 (Schiner).
Pipiza lunata Meigen, Syst. Beschr., iii, 243, 4 (Schiner).
Pipiza artemis Meigen, Syst. Beschr., iii, 244, 5 (Schiner).

Habitat.—Europe!, Canada? (O. S.)

♂, ♀. Length, 6 to 10.5^{mm}. Front and face long white pilose, below the ocelli and about the base of the antennæ in the female, blackish pilose. Antennæ brown, third joint trapezoidal. Thorax white pilose. Posterior part of the second and third abdominal segments black pilose; second segment with a variable yellow band, "sometimes sulphur yellow, at other times reddish yellow; anterior margin concave or straight; sometimes interrupted by a distinct black space, at other times only by a dark line." (Schiner). Legs yellow, with black femora; tibiæ more or less brown in the middle. Wings hyaline on the basal half, externally blackish or smoky brown, fading out toward the margin; stigma dark luteous.

I give the description of this species, although it is not known for certain that it occurs in this country, it being given in Osten Sacken's catalogue, with the remark, "or a species allied to it," as occurring in Canada. The European species, *P. noctiluca*, closely related, has the tarsi in large part black.

Pipiza puella, n. sp. (Plate II, fig. 3.)

Habitat.—New Hampshire!

♂. Length, 6^{mm}. Dark bluish black, clothed with light yellowish-white pile. Frontal triangle white pilose on upper portion, black pilose below; face white pilose, except near the mouth, where it is black pilose. Antennæ black; third joint cordate. Eyes blackish pilose, in some lights showing luteous; posterior orbits wholly white ciliate, a little blackish pile at the vertex only. Abdomen with short black pile, except on the broad anterior angles and lateral margins of each segment. Legs black; the immediate tip of front and middle femora, the front tibiæ, except a broad brownish ring, the middle and hind tibiæ at base and tip, and all the tarsi, except the last two joints, yellow. Wings nearly hyaline before the cross-veins, with a distinct brownish cloud at the cross-veins, fading out beyond and behind; stigma luteous; cross-veins at outer part of first posterior and discal cells nearly parallel with the hind border of the wing, the outer posterior angle of first posterior cell with a stump of a vein.

One specimen, White Mountains, New Hampshire, August 1.

Pipiza (Penium) albipilosa, n. sp.

Habitat.—Pennsylvania!

♀. Length, 7mm. Antennae black, the third joint more brownish, and near the base, especially on the inner side, reddish; in shape obtusely pointed on the lower anterior part, subcordate, only a little longer than broad. Head and thorax shining black, with a greenish reflection, wholly clothed with nearly white, rather long pile, except just above the insertion of the antennae where there is a small quantity of black pile. Abdomen shining black, on the posterior part of the second and third segments with narrow, more dark appearing cross-bands of short black pile; pile elsewhere light colored, shorter and less abundant than on the thorax. Legs black, wholly with light colored pile; front and middle tibiæ, except a brown ring in the middle, and the hind tibiæ at base and end, and all the tarsi, except the last two or three joints (which are brown) luteous. Hind femora considerably thickened, the hind metatarsi only slightly so. Wings hyaline on the basal part, distinctly clouded with brownish across the middle, becoming less strong toward the end and posterior part; stigma yellow; outer anterior angle of the first posterior cell acute, briefly petiolate, the cross-veins at outer part of the first posterior and discal cells nearly parallel with the posterior border of the wing; posterior angle of first posterior cell obtuse, with a stump of a vein.

Two specimens from Mr. Eugene Keen, collected in Fairmount Park, Philadelphia.

Pipiza nigripilosa, n. sp.

Habitat.—Pennsylvania!

♂. Length 5.5mm. Deep shining black, with black pile. Pile on the posterior part of the vertical triangle; the post-orbital cilia and the pile of the eyes more brownish black, in some views brownish. Antennæ black, third joint brownish red, subcordate, scarcely twice as long as wide. Pile in front of dorsum of thorax in some views more brownish. Abdomen wholly with short erect black pile, except along the borders there may be a few light-colored hairs. Legs black, the tip of the femora, the front and middle tibiæ, except a brownish ring, and the base and tip of hind tibiæ, and all the tarsi, except the brownish two or three terminal joints, luteous; pile chiefly black, on the under side of the hind femora more brownish or obscurely yellowish; hind metatarsi only a little thickened. Wings hyaline, first posterior cell short petiolate, the angle acute; the cross-veins at outer part of the first posterior and discal cells nearly parallel with the hind border of the wing; stigma yellowish.

One specimen collected by Mr. Eugene Keen, in Fairmount Park, Philadelphia.

Pipiza pistica, n. sp.

Habitat.—Connecticut!

♀. Length, 7.5mm. Antennae black, the third joint yellow along the lower side; in shape oblong, more than twice as long as wide. Face wholly white pilose. Front black pilose below and above, across the middle white pilose. Eyes whitish pilose, but variable in different reflections, appearing blackish. Pile on the orbits behind white. Thorax, as the head and abdomen, shining metallic black, with a light greenish reflection, moderately long, white pilose. Abdomen white pilose, except on the posterior margins of the second and third segments, where it is very briefly black pilose. Legs black, white pilose, the tip of all the femora, the rather broad base of the four front tibiæ, and the immediate base of the hind tibiæ, the tip of four front tibiæ, and the basal joints of their tarsi, yellow, the last two joints of the four front tarsi blackish; hind metatarsi very distinctly thickened. Wings hyaline, the stigma light yellow.

Two specimens, June 10, New Haven.

Pipiza pisticoides, n. sp.

Habitat.—White Mountains!

♀. Length, 6mm. A single specimen taken near the base of Mount Washington, August 1, resembles *P. pistica* very much, but seems evidently different. The third joint of the antennæ is orbicular, as broad as long; the pile throughout is shorter, on the abdomen scarcely discernible; the size is also distinctly smaller.

Pipiza (Pipizella) pulchella, n. sp. (Plate II, figs. 1, 1*a*, 1*b*.)

Habitat.—Connecticut, Massachusetts!

♀. Length, 5.5mm. Shining, greenish black, clothed with not very abundant nor long, nearly white pile. Front and face wholly white pilose, the former with a small triangular spot near each orbit, the latter with a narrow orbital margin, white pollinose. Post orbital cilia white; the short pile of the eyes dark. Face gently convex near the middle. Antennæ elongate, but shorter than the face; the third joint three or four times as long as wide, black, the third joint yellowish on the lower basal part. Scutellum with a slender deep groove before its margin. Abdomen very short pilose, on the posterior part of the second and third segments black, elsewhere nearly white. Legs black, white pilose; tip of all the femora, base and immediate tip of anterior tibiæ, base of hind tibiæ, first two joints of anterior, and the middle two of hind tarsi, yellow; hind metatarsi considerably thickened. Wings grayish hyaline; last section of fourth vein angulated in the middle, posterior cross-vein rectangular; stigma luteous.

Two specimens, Connecticut, Massachusetts. The convexity of the face is not so strong in one specimen as is figured.

ADDITIONAL NORTH AMERICAN SPECIES.

Pipiza divisa Walker, Trans. Ent. Soc., N. Ser., iv, 156.—Vera Cruz.

PSILOTA.

Psilota Meigen, Syst. Beschr., iii, 256, 1822.

Small, black, rather thickly pilose species. Eyes pilose, contiguous in the male. Antennæ: First two joints short, third more or less elongated, arista dorsal, basal, bare. Face pilose, the epistoma produced forwards. Abdomen short, broad. Hind femora a little thickened. Wings as in *Myiolepta;* marginal cell open; anterior cross-vein near base of discal cell; third vein nearly straight; false vein obsolete. Type of genus *P. anthracina* Meigen, Europe.

In the type of this genus the face is concave from the antennæ. In our single American species the face is convex above and concave below; the third joint of the antennæ is also more elongate. These differences are, however, not important enough to exclude our species.

Psilota buccata.

Pipiza buccata Macquart, Dipt. Exot., ii, 2, 107; pl. xviii, fig. 2.
Psilota flavidipennis Macquart, Dipt. Exot., 5e Suppl., 97; pl. v. fig. 5.

Habitat.—United States!, Carolina (Macq.).

♂, ♀. Length, 7 to 8mm. Shining, metallic greenish black. Head shining black, front and face clothed with white pile. Antennæ blackish brown, the second joint deep red or nearly black; not as long as the face. Dorsum of thorax and scutellum in the male clothed with rather abundant, erect, somewhat yellowish pile; in the female shorter, less abundant, and more whitish pile; pleuræ with whitish pile. Abdomen shining bronze black, in the male with yellowish, in the female more whitish, erect pile. Femora, except the tip, black; tibiæ and tarsi yellow, except that the middle portion of the middle and hind tibiæ is brownish or blackish, and the terminal joints of all the tarsi are blackish. Wings nearly hyaline; on the outer part, especially in front, with a brownish cast.

Two specimens in the Loew type collection at Cambridge, labeled *Psilota flavidipennis.* I have no doubt that this species is *Pipiza buccata;* that it is Macquart's *Psilota flavidipennis* is doubtful. The description of the latter is as follows:

Psilota flavidipennis.

Psilota flavidipennis Macquart, Dipt. Exot., 5e Suppl., 97; pl. v, fig. 5.

"*Nigra, flavido tomentosa, metatarso testaceo. Alis flavidis.*"

"Long. 3l. (6mm), ♂. Face à léger duvet gris, saillante dans le bas, un peu convexe dans le haut; épistome saillant. Front proéminent. Antennes noires; premier article un peu allongé, troisième oblong. Yeux velus de jaunâtre. Thorax d'un noir luisant, à poils jaunâtres. Abdomen un peu plus étroit que dans le *P. anthracina*, d'un noir mat et

à poils jauntâres; quatrième segment luisant. Pieds noirs; base des jambes et métatarse testacés. Ailes d'un jaune roussâtre assez pâle."

"Philadelphie. Cette espèce est intermédiaire entre les Psilotes et les Pipizes."

LEPROMYIA, NOM. NOV.

Lepidomyia Loew (non Bigot), Centur., v, 38, 1864.

Small, black, nearly bare species, the thorax and borders of the abdomen with sparse squamulæ. Head like that of *Chrysogaster*, but without facial or frontal wrinkles; antennæ elongate. Abdomen short, broad. Anterior cross-vein of the wings near base of discal cell, third vein nearly straight, last section of fourth vein sinuate, marginal cell open. All the femora moderately thickened and with rows of short spines below. Type of genus *L. calopus* Loew, West Indies.

Lepromyia calopus.

Lepidomyia calopus Loew, Centur., v, 38.

Habitat.—Cuba (Lw.)!

♀. Length, 5^{mm}. Black, thinly clothed with whitish tomentum. Base of the tibiæ and the first two joints of the tarsi white; wings spotted with black.

Black, rather bare, somewhat shining. Front plane, a little broader below, with a median, subobsolete impressed line, and, on each side, with two whitish pollinose spots. Antennæ narrow, about equal in length to the face; first two joints reddish, the second one a little longer than the first, and fuscous on its upper part; third joint elongate, black, the base below reddish; arista basal, bare, fuscous. Thorax with the scutellum and pleuræ thinly but evenly clothed with minute whitish squamulæ. Abdomen plane, the sides and tip with white squamulæ, wanting on the disk. Legs black, shining, somewhat bluish; base of the tibiæ and the first two joints of the tarsi white; all the femora thickened, armed below with a double series of small spines; tibiæ subclavate, the hind pair moderately arcuate. Wings hyaline, spotted with black.

Translation from the original, compared with the type specimen at Cambridge. See, also, appendix.

CHRYSOGASTER.

Chrysogaster Meigen, Illiger's Magazine, ii, 274, 1803.
Orthoneura Macquart, Hist. Nat. Dipt., i, 563, 1834.
Camptoneura Rondani, Dipt. Ital. Prodr., ii, 1857.
Cryptineura Bigot, Rev. et Magaz. de Zool., 1859.

Small, metallic green or blue, or black species, wholly without yellow markings, except on the legs, distinctly characterized from all other genera by the front in the female having transverse lateral wrinkles.

Head hemispherical, rather large, broader than the thorax. Antennæ not longer than the head, varying, sometimes the first two joints very short and the third nearly round, frequently with the third joint elongated, as also the second; arista basal, bare. Face in the sexes usually different in profile, in the male generally less concave, the epistoma less projecting, and sometimes with a distinct, more or less prominent convexity near the middle; in the female usually deeply concave and the epistoma salient. Eyes in the male contiguous (in some exotic species broadly separated). Frontal triangle sometimes swollen and with a distinct pit-like depression in the middle. Front in the female with lateral, transverse, irregular wrinkles, in the middle usually a slender longitudinal space, smooth, bounded on each side by a linear groove; over the antennæ usually with a transverse arcuate groove, below which the space is smooth. Scutellum gently thinned above near its border, sharp, sometimes wrinkled on its disk. Abdomen short, oval, flattened, the borders, however, rounded, not thinned. Legs moderately strong, simple, the hind femora scarcely longer or thicker than the others. Marginal cell of wings open, third vein straight, anterior cross-vein considerably before the middle of the discal cell, rectangular, the last section of the fourth vein frequently more or less bent, always joining the third vein considerably before its tip, often bent in so that the tip is less remote from the anterior cross-vein than is the posterior angle of the cell which it closes; the cross-vein at outer end of discal cell also joins the fourth vein considerably before its angle, the false vein frequently entirely wanting, never very distinct.

My reasons for uniting *Orthoneura* with this genus are explicitly enough given by Loew (Stett. Ent. Zeit., 1843). It is true this author and Schiner did afterwards make use of *Orthoneura*, but that the former did not have a very clear idea of the genus is sufficiently shown by his *O. nigripes*, described in the male as *Chrysogaster* and in the female as *Orthoneura ustulata*. The character these authors used was the manner of termination of the fourth vein.

TABLE OF SPECIES.

1.—Base and tip of tibiæ, or at least first two joints of tarsi, yellow or yellowish red; last section of fourth longitudinal vein rectangular; antennæ elongate . 2

Legs wholly black; last section of fourth vein curved or bent 5

2.—The last section of the fourth vein joins the third beyond the tip of second vein, rectangular, with a stump of a vein in the middle; second joint of antennæ nearly as long as the third; eyes with linear markings . . . . . **nitida**

The last section of fourth vein joins the third opposite or before the tip of the second; disk of abdomen opaque 3

3.—Eyes with linear markings . . . . . **bellula**

Eyes unicolorous 4

4.—Abdomen broadly oval; wings with browniah clouds . . . . . **plotipennis**

Cross veins of wings not clouded . . . . . **pulchella**

5.—Third joint of antennæ nearly rounded 7
Third joint elongate, or at least twice as long as wide; tip of fourth vein less remote from anterior cross vein than is the posterior angle of the cell included 6
6.—Third joint of antennæ elongate . . . . . stigmata
Third joint of antennæ short . . . . . nigrovittata
7.—Front of female lightly rugose . . . . . lata
Front of female strongly rugose . . . . . nigripes

Chrysogaster nigripes. (Plate II, figs. 10, 10*a*.)

Chrysogaster nigripes Loew, Centur., iv, 60 (male).
Orthoneura ustulata Loew, Centur., ix, 80 (female).
? *Chrysogaster Antitheus* Walker, List, etc., iii, 572.

Habitat.—Connecticut, New York, New Jersey, North Carolina!.

♀, ♂. Length, 7 to 8^{mm}. Eyes unicolorous. Legs wholly greenish black. Wings a little blackish, more nearly hyaline near the base and posterior part, more or less clouded on the outer part, especially in the end of the marginal, sub-marginal, and first posterior cells; stigma dilutely brownish; the last section of the fourth vein very oblique, a little convex outward near the angle, and then more broadly concave, the tip joining the third vein in a right angle. First two joints of antennæ very short, reddish yellow; the third round or a little oval, reddish yellow, the upper border darker. Head wholly shining, except a broad white dusted cross-band on the upper part of the face just below the antennæ.

♂. Head metallic bluish green, shining; antennæ very small. Frontal triangle very large, swollen, with a longitudinal depression. Face in profile gently concave, distinctly tuberculate below the middle, the epistoma not at all prominent. Dorsum of thorax opaque black, with numerous small, greenish, more shining spots, which on the sides become confluent, forming stripes. Disk of abdomen deep opaque black, the margins shining brassy green, except at the incisures of the second and third segments, where the black may extend narrowly to the margin.

♀. Deep bluish green, the head and thorax sometimes a deep cobalt blue. Face very concave and prominent below, in profile very dissimilar to that of the male. Third joint of the antennæ much larger than in the male. Front broad and long; on the sides strongly rugose, a narrow longitudinal space in the middle smooth. Abdomen shining, but less so on the disk, the first segment, the hind margin of the second and third segments, and a rather broad, less distinct stripe, reaching nearly to the tip of the fourth segment, opaque black.

Four males and five females. In four of my specimens, both male and female, like specimens Loew described, the second and third segments of the abdomen are in large part sordid yellowish, and the wings may almost wholly lack the blackish clouds. All but one of my specimens were taken together from the same bush of *Prunus virginianus* on June 25. That they belong together I do not have the slightest doubt. Very

similar differences between the sexes occur in *C. viduatur* of Europe. The neuration is precisely alike in both sexes; that Loew described them under two genera is sufficient evidence of the valuelessness of the characters upon which Orthoneura is based.

It seems very probable that Walker's *Antitheus* is this species, yet it is not at all certain, and it would be imprudent to substitute the name; nor should it be, indeed, were the type to prove this supposition correct.

Chrysogaster nigrovittata. (Plate II, figs. 11, 12.)

Orthoneura nigrovittata Loew, Zeitschr. für Naturw., 1876, 378.
Chrysogaster nigrovittatus Williston, Proc. Am. Phil. Soc., xx, 304.

Habitat.—Washington Territory, California, Colorado!.

♂, ♀. Length, 5mm. Antennæ yellowish red, the first joint and upper part of third dark or blackish; the first two joints short, the third oval. Face bluish greenish black, considerably projecting below; on the upper part with delicate transverse striæ; a narrow silvery white cross band of dust extends between the eyes immediately below the antennæ, in the middle less distinct. Frontal triangle pitted in the middle, somewhat swollen, with black pile. Eyes unicolorous, contiguous in the male for a considerable distance. Front in female rugose on the sides, narrowed above, in the middle with a slender smooth longitudinal space. Dorsum of thorax finely punctulate, deep green, with four blackish stripes, in some reflections a little coppery. Abdomen deep greenish sub-opaque, the margins shining metallic. Legs wholly black, with a greenish cast. Wings with a slightly blackish tint; stigma dark brownish; cross vein at outer part of discal cell nearly straight, the last section of the fourth vein bent inward near the middle, the anterior end joining the third before the tip of the second vein.

Six specimens from California, two from Washington Territory, and four from Colorado (H. K. Morrison).

Chrysogaster stigmata. (Plate II, fig. 8.)

Chrysogaster stigmatus Williston, Proc. Am. Phil. Soc., xx, 303.
Orthoneura sinuosa Bigot, Annales Soc. Ent. France, 1884, 556.

Habitat.—California!.

♂, ♀. Length, 6 to 7mm. Antennæ black, about as long as to the tip of epistoma, the second joint about one-third as long as the third. Face deep shining green, with delicate striæ on the upper part, smooth below, with sparse white pile, and a silvery triangle above near the orbit; gently convex, the lower part abruptly and moderately produced downwards and forwards. Frontal triangle like the face, only slightly swollen, with a distinct pit in the middle above the antennæ; vertical triangle greenish black, obtuse in front. Front in female broad, with very distinct lateral transverse furrows. Dorsum of thorax deep shining green, with short whitish pubescence. Scutellum distinctly grooved before its tip. Abdomen flat, broadly oval, with delicate white pubescence; the dorsum black with a greenish cast, the sides broadly, and

the hypopygium, brassy, much shining; in the single female specimen the brassy color is confined to the sides of the first two segments and the anterior angles of the third. Legs shining greenish black. Wings with a distinct blackish tinge, stigma brown, outer posterior angle of first posterior cell rounded or obtusely angulated, usually with a stump of a vein, the tip of fourth vein strongly bent inward.

Four specimens.

Chrysogaster pulchella, n. sp. (Plate II, fig. 9.)

Habitat.—New Hampshire, Connecticut, Canada!

♂, ♀. Length, 4½ to 5mm. Antennæ yellowish or brownish red, the third joint black, except at the base; second joint less than half the length of the third, the whole antenna about as long as the face. Head deep metallic greenish black; face with delicate striæ on the upper half, and a small triangular, silvery spot near the eye on each side above, epistoma considerably protuberant; in the male the face is more nearly straight in profile with a short, rather deep concavity on the lower part. Frontal triangle not rugose, a little swollen and pitted; front in female narrowed above, strongly rugose on the sides, in the middle with a slender, longitudinal space, and the lower part, smooth. Eyes unicolorous. Dorsum of thorax strongly metallic, but little shining, greenish brassy, delicately roughened, with four coppery, in some reflections purplish, stripes. Pleuræ brilliant. Abdomen not very broadly oval, opaque black on the disk, brilliant metallic on the margins and venter. Legs metallic black; extreme tip of femora, base and tip of tibiæ, and first two joints of the tarsi, reddish yellow. Wings nearly hyaline, faintly clouded on outer part, stigma brown, last section of fourth vein nearly straight, a little oblique, so that the anterior angle of the cell is slightly obtuse.

Sixteen specimens from the White Mountains, N. H. (July 25–30), two additional ones from the same regions from Dr. George Dimmock (1561–2), and two others from Connecticut, June 20. The third joint of the antennæ may be in large part yellowish red, the black confined to the upper border and distal part. The last section of the fourth vein is usually quite straight, but sometimes slightly sinuate, and in one specimen with a stump of a vein near the middle on the inner side.

Chrysogaster nitida. (Plate II, figs. 7, 7*a*.)

Chrysogaster nitidus Wiedemann, Auss. Zwei. Ins., ii, 116, 1.
Cryptineura hieroglyphica Bigot, Rev. et Magaz. de Zool., 1859.
Paragus aeneus Walker, List, etc., iii, 545.
Orthoneura hieroglyphica Loew, Centur., iv, 58, note.
Orthoneura nitida Schiner, Novara Exped. Dipt., 368, 99; Osten Sacken, Cat. Dipt., 121.

Habitat.—New England, Pennsylvania, Virginia, South Carolina, Kansas!, South America (Schiner).

♂, ♀. Length, 4 to 5mm. Head brassy metallic black. Antennæ longer than the face, first and second joints yellowish red or brownish, the

third black, only a little longer than the second. Face rugose; concave on the lower part, the epistoma but slightly produced; a small silvery spot on each side near the eye above. Front in female narrow above, strongly transversely rugose, with a median furrowed longitudinal line. Frontal triangle rugose. Eyes with a median straight horizontal line and two vertical labyrinthine brown lines. Dorsum of thorax metallic green, finely roughened, with four longitudinal stripes of a coppery or metallic purple color, in some reflections brown, the outer ones more or less divided into two nearly contiguous ones. Scutellum more distinctly roughened, or lightly rugose, grooved before the apex. Abdomen deep metallic green, roughened, and only a little shining on the disk, but distinctly so on the margin and tip. Second and third segments with more or less distinct cross-bands of a more opaque color in front and behind. Legs metallic black; knees and base of tibiæ and their tip, and first two joints of tarsi, reddish yellow. Wings nearly hyaline, with slender blackish spots on the outer cells; stigma dilutely brownish; a narrow brown cloud from tip of second vein reaching across the submarginal cell; cross veins narrowly clouded with brown; veins at outer part of discal and first posterior cells rectangular, nearly straight, slightly angulated in the middle, and with a stump of a vein on the inner sides; the fourth vein terminates distinctly beyond the tip of the second.

Numerous specimens.

Chrysogaster bellula. (Plate II, figs. 6, 6*a*.)

Chrysogaster bellulus Williston, Trans. Amer. Phil. Soc., xx, 304.

Habitat.—California, Washington Territory, Colorado!.

♂, ♀. Length, 4.5 to 6mm. Antennæ reddish or reddish brown, about as long as the face, second joint shorter than the third. Face deep green, lightly rugose, white pilose, a small triangular white silvery spot near each orbit just below the antennæ; epistoma moderately produced downwards. Frontal triangle not swollen, rugose; front (♀) with well marked lateral rugosities; eyes with irregular narrow brown markings. Thorax and scutellum bright green, scabrous, with four coppery stripes. Abdomen oval, a little darker green, sometimes with a bluish cast, opaque, shining on the borders, lightly punctulate, on the posterior part of each segment sometimes coppery. Legs blackish green, base and tip of the tibiæ usually narrowly, and the basal joints of the tarsi, yellowish red. Wings nearly hyaline, lightly clouded in the outer cells, stigma brownish, the cross-veins scarcely clouded; last section of the fourth vein usually straight, rectangular, joining the third nearly opposite the tip of the second vein, clouded with brown, the cloud either extending across to the tip of the second vein or more or less interrupted in front of the third.

Twelve specimens, Colorado (Professor Comstock), California, Washington Territory.

Differs from *C. nitida*, which it closely resembles, in the second joint of the antennæ being shorter, the concavity of the face less, and in the termination of the fourth longitudinal vein.

Chrysogaster pictipennis.

Orthoneura pictipennis Loew, Centur., iv, 58.

Habitat.—Connecticut, New York, New Jersey!.

♂, ♀. Length, 5.5 to 6mm. Head metallic bronze-green. Antennæ elongate, black, the first two joints and the base of the third reddish; considerably longer than the face, the third joint not three times as long as the second. Face finely wrinkled in both sexes; the epistoma considerably and abruptly projecting; on each side of the base of the antennæ near the eye a triangular silvery white spot. Front in female broad, markedly rugose, with a slender median furrow. Eyes unicolorous. Dorsum of the thorax moderately shining, finely punctulate, with four bronze-purple stripes, the lateral ones abbreviated in front, the intermediate ones behind. Scutellum flattened. Disk of the abdomen moderately shining, the margins bronze-green or coppery shining. Legs green-black, the base and tip of the tibiæ and the first two joints of the tarsi reddish yellow. Tegulæ white. Halteres dilutely yellowish. Wings cinereous; the discal and first posterior cells with brownish spots, stigma and clouds on the transverse veins fuscous; the fourth vein terminates in the third before the tip of the second, the terminal segment, and the vein at outer end of discal cell, straight, with a stump of a vein on the inner side.

Six specimens.

Chrysogaster lata.

Chrysogaster latus Loew, Centur., iv, 59.

Habitat.—British North America (Loew), Oregon!.

♀. Bronze-black, shining, legs wholly of the same color, antennæ of moderate size, black, third joint rotund, piceous; sides of the front below transversely rugose; wings sublutescent, stigma and veins luteous. Length, 7mm.

Bronze-black, shining, with sparse, very short whitish pile. Front broad, on the sides below transversely rugose. Antennæ of moderate size; third joint subrotund, fuscous, arista of the same color. Facial tubercle wanting, epistoma strongly produced. Abdomen broad, shining, the posterior margin of the last segment entire. Legs wholly bronze-black. Halteres and tegulæ lutescent. Wings toward the costa dilutely sublutescent, veins and stigma luteous. (English River, Kennicot).—Translation.

A single female specimen from Mount Hood, Oreg., agrees very well with this description. The front is only lightly rugose on the sides.

P.S.—An examination of the type at Cambridge assures me that the Oregon specimen belongs here.

CHILOSIA.

Cheilosia Meigen, System. Beschr., iii, 296, 1822.
Cartosyrphus Bigot, Annal. Soc. Ent. de France, 1883, 230.

Moderately large to rather small species, metallic black, or black-green, rather thickly pilose, sometimes almost quite bare. Head hemispherical, scarcely broader than the thorax. Antennæ short, small, third joint rounded or a little oval, never elongate, with a basal, bare, pubescent, or plumose arista. Face black or metallic green, rarely somewhat reddish below, thinly pilose or pollinose, or quite bare; a little below the middle with a tubercle, usually thence more sharply concave to the slightly projecting oral margin; near the eye, with a more or less distinct, parallel, slender groove; in profile the lower part sometimes produced downwards and forwards, at other times nearly perpendicular. Eyes pilose or bare, contiguous in the male. Front in female never wrinkled, usually with one or more linear depressions; in the male the frontal triangle more or less swollen, with an impressed longitudinal line or pit. Scutellum rarely reddish on the border, sometimes along its margin with a row of bristly hairs. Abdomen longer than the thorax, elongate oval, never slender; of five or six segments. Legs simple, rather weak. Marginal cell of wing open, third vein gently convex anteriorly, anterior cross vein towards the base of discal cell; outer anterior angle of first posterior cell always acute.

In Europe this genus comprises nearly a hundred species, and it is not probable that more than one-third of our species are known. The flies are inconspicuous and not very active. The sexes differ much, in not a few cases, in the color and length of the pile, in the color and size of the third antennal joint, and in the markings of the abdomen, which in the male is sometimes velvety opaque on the disk; moreover, in the female the face below, the humeri, and border of the scutellum, are sometimes reddish or yellowish.

TABLE OF SPECIES.

1.—Eyes pilose 2
Eyes bare 6
2.—Wings yellowish at base; pile on dorsum of thorax light colored 4
Wings not lighter at the base; the veins blackish; pile of dorsum black . 3
3.—Antennæ black; eyes densely pilose; face but slightly concave in profile below the antennæ (♂) . . . . . **occidentalis**
Antennæ yellow; eyes thinly pilose; face considerably concave below the antennæ (♂) (See Appendix.) . . . . . **hoodiensis**
4.—The face extends considerably below the eyes; the distance from antennæ to tip of tubercle much greater than thence to lowest part; above the tubercle in profile gently concave . . . . . **lasiophthalma**
Face not much produced downward; in profile considerably concave below the antennæ 5

Differs from *C. nitida*, which it closely resembles, in the second joint of the antennæ being shorter, the concavity of the face less, and in the termination of the fourth longitudinal vein.

Chrysogaster pictipennis.

Orthoneura pictipennis Loew, Centur., iv, 58.

Habitat.—Connecticut, New York, New Jersey!.

♂, ♀. Length, 5.5 to 6^{mm}. Head metallic bronze-green. Antennæ elongate, black, the first two joints and the base of the third reddish; considerably longer than the face, the third joint not three times as long as the second. Face finely wrinkled in both sexes; the epistoma considerably and abruptly projecting; on each side of the base of the antennæ near the eye a triangular silvery white spot. Front in female broad, markedly rugose, with a slender median furrow. Eyes unicolorous. Dorsum of the thorax moderately shining, finely punctulate, with four bronze-purple stripes, the lateral ones abbreviated in front, the intermediate ones behind. Scutellum flattened. Disk of the abdomen moderately shining, the margins bronze-green or coppery shining. Legs green-black, the base and tip of the tibiæ and the first two joints of the tarsi reddish yellow. Tegulæ white. Halteres dilutely yellowish. Wings cinereous; the discal and first posterior cells with brownish spots, stigma and clouds on the transverse veins fuscous; the fourth vein terminates in the third before the tip of the second, the terminal segment, and the vein at outer end of discal cell, straight, with a stump of a vein on the inner side.

Six specimens.

Chrysogaster lata.

Chrysogaster latus Loew, Centur., iv, 59.

Habitat.—British North America (Loew), Oregon!.

♀. Bronze-black, shining, legs wholly of the same color, antennæ of moderate size, black, third joint rotund, piceous; sides of the front below transversely rugose; wings sublutescent, stigma and veins luteous. Length, 7^{mm}.

Bronze-black, shining, with sparse, very short whitish pile. Front broad, on the sides below transversely rugose. Antennæ of moderate size; third joint subrotund, fuscous, arista of the same color. Facial tubercle wanting, epistoma strongly produced. Abdomen broad, shining, the posterior margin of the last segment entire. Legs wholly bronze-black. Halteres and tegulæ lutescent. Wings toward the costa dilutely sublutescent, veins and stigma luteous. (English River, Kennicot).—Translation.

A single female specimen from Mount Hood, Oreg., agrees very well with this description. The front is only lightly rugose on the sides.

P. S.—An examination of the type at Cambridge assures me that the Oregon specimen belongs here.

lum, with fine black bristles. Abdomen shining dark metallic green, pile light colored, very short and thin. Legs brownish black; tip of femora, base and tip of four front tibiæ, yellow; base and tip of hind femora, and the four front tarsi, yellowish brown. Wings lightly infuscate; stigma light yellow, veins near the base yellowish.

One specimen. This species differs from *C. Baroni*, to which it is most nearly allied, in the antennæ being larger and lighter colored, the arista pubescent, the facial tubercle smaller and much less projecting. The pile of the front, thorax and abdomen is, moreover, much shorter.

Chilosia Baroni, n. sp.

Habitat.—California, Washington Territory!

♂, ♀. Length, 7 to 9mm. Deep shining black, with moderately abundant whitish pile. Eyes pilose. Face on the sides somewhat whitish pollinose, but without pile, except laterally between the lateral groove and the eye; near the middle a very large and convex tubercle; not extending downward much below the eyes; cheeks not broad. Antennæ small, reddish brown, third joint nearly square; arista bare. Frontal triangle somewhat swollen, with an impressed longitudinal line; pile fuscous. Front shining, clothed with abundant whitish pile. Thorax, on the post-alar callosities and the border of the scutellum, with black bristly hairs; the pile rather abundant and long. Abdomen everywhere shining, more metallic on the sides; the pile rather long and abundant on the sides toward the base. Legs black; tip of femora, and tibiæ, except a black ring, yellowish red, the hind tibiæ sometimes with only the base and the tip reddish; basal joints of the middle tarsi, and sometimes of the hind tarsi, yellowish red, the terminal joints blackish. Wings nearly hyaline, in the region of the cross-veins yellowish, faintly blackish toward the outer part; veins at the base, except the costa, yellowish.

One male and three female specimens, Washington Territory and California (O. T. Baron). The specimen from Washington Territory is larger, and the third joint of the antennæ is reddish yellow.

Chilosia lasiophthalma. (Plate III, fig. 2.)

Cheilosia lasiophthalmus Williston, Proc. Am. Phil. Soc., xx, 306, 1882.

Habitat.—Colorado!

♂. Length, 10 to 11mm. Frontal triangle moderately swollen, with an impressed longitudinal line, and light yellowish pile. Antennæ brownish red, third joint not large, nearly square; arista bare, black. Face deep shining black, with yellowish pubescence, nearly vertical below the antennal prominence, tuberculate below; considerably produced below the eyes; a well-marked groove begins at the base of the antennæ, runs obliquely outward, to the eye, then curves downward near the eye into the cheek. Posterior orbits below broadly dusted with yellow. Eyes thickly reddish yellow pilose. Thorax deep metallic green, shining, thickly covered with yellow or reddish yellow pile, on the

pleuræ bushy. Abdomen rather broadly oval, shining black, with abundant pile like that of the thorax. Tegulæ light yellow. Legs black, with yellow pile; femora at the tip, base and tip of tibiæ, and basal joints of middle tarsi, yellow or luteous; front and hind tarsi brownish with more or less yellowish. Wings subhyaline with an indistinct brownish spot near the middle; veins of the basal part yellowish.

Thirteen specimens, Colorado.

Chilosia occidentalis. (Plate III, figs. 1, 1*a*.)

Cheilosia occidentalis Williston, Proc. Am. Phil. Soc., xx, 305.

Habitat.—California!

♂. Length, 11mm. Eyes thickly pilose; frontal triangle black, with black pile, somewhat swollen and with a central depression. Antennæ black, third joint somewhat brownish, nearly orbicular, small; arista with scarcely perceptible pubescence. Face shining black; on the sides with rather long, sparse, light-colored pile; slightly concave from base of antennæ to tip of tubercle, shortly and deeply concave below the latter; a well-marked groove on the side parallel to the eye, running obliquely to the base of the antennæ. Thorax deep green-black, with blackish pile mixed with shorter lutescent. Scutellum on its border with a row of longer hairs. Abdomen oval, not at all slender, shining metallic green on the sides and fourth segment; the first three segments mostly opaque black; pile reddish yellow, rather long and abundant on the sides of the segments, nearly bare in the middle. Legs black, with yellowish and black pile; tibiæ reddish at base and tip. Wings with a slight blackish tint, the veins black.

One specimen, California.

Chilosia pallipes. (Plate III, fig. 5.)

Chilosia pallipes Loew, Centur., iv, 70.
? *Chilosia tristis* Loew, ibid., 71.

Habitat.—White Mountains, Washington Territory, Oregon!, California, District of Columbia (O. S.).

♀. Length, 7 to 8mm. Shining metallic obscurely green. Front moderately broad, shining, lightly pollinose on the sides below, with a slight concavity in the middle above the base of the antennæ; pile yellow. Antennæ ferruginous red, third joint rather small, rounded-ovate; arista black, rather thickly and long pubescent. Face whitish pollinose across below base of the antennæ; shining black, except on each side below, there is a yellowish spot, sometimes smaller, at other times large and extending from the eye to the oral margin. In profile the face is deeply concave below the antennæ, and the tubercle large and obtuse. Eyes bare. Humeri light yellow; pile of thoracic dorsum very short, yellow. Scutellum at the tip, or most usually nearly wholly, brownish yellow, the base black; pile yellow, and with six black bristles on its border. Abdomen wholly shining, not very oval; pile very short, on the disk ob-

scure, on the sides longer, whitish. Legs yellow; hind femora, except basal third and tip, a ring on the outer part of hind tibiæ, and the hind tarsi, brown or blackish; sometimes the black is of greater extent on the hind legs, and there may be brownish rings on the outer part of middle femora and tibiæ. Wings hyaline.

♂. Face wholly shining black, except the thin whitish pollen below the antennæ and on the sides below the tubercle. Frontal triangle small, slightly swollen, lightly fossulate, pile black. Thorax and scutellum wholly shining black, with only a slight bronze or coppery reflection; pile black, rather long, especially in front; behind, intermixed with reddish yellow. Scutellum wholly shining black, pile long, black, with reddish yellow, the latter more conspicuous as a fringe on the under side of the margin. Abdomen opaque black; the first segment, large spots on the anterior angles of the third, the fourth segment wholly, and likewise the hypopygium, shining, metallic greenish black; pile on the disk black; on the sides toward the front, longer, yellow. Legs black, tip of all the femora, base and tip of the tibiæ, and the extreme base and tip of all the tarsal joints, yellowish red. Wings distinctly yellowish or brownish in front toward the base.

Five males and forty females taken together (Jackson, N. H., July 25–30,) assure me that they must belong together. The females agree precisely with the description of *pallipes*, except that they are all larger, while the males agree equally well with *tristis*, the female of which Loew describes; and the only differences which it shows from the above are that the legs are black, except the knees and base of the tibiæ, and the light-colored humeri are not mentioned. In some of my female specimens, however, the front and middle legs are in large part blackish, and in one they are almost wholly black. Two male specimens from Washington Territory and Oregon I refer to this, although the pile of the dorsum of the thorax is wholly black, and the legs are less black, the front and middle tibiæ having only a black ring, and the first two joints of the tarsi yellowish. They are also distinctly larger.

Chilosia cyanescens. (Plate III, figs. 3, 4.)

Chilosia cyanescens Loew, Centur., iv, 67 (male).
? *Chilosia plumata* Loew, ibid., 68 (female).

Habitat.—Connecticut, New Hampshire!, Illinois (Loew).

♂. Length, 5 to 6mm; of wings, 6 to 7mm. Blackish blue, shining; pile of the front and thorax black, of the abdomen light colored. Antennæ small, yellowish red, third joint ovate; arista black, plumose. Face wholly black; except on the moderately projecting tubercle, lightly pollinose. Eyes bare. Frontal triangle small. Margin of the scutellum with black bristles; on the under side with whitish pile. Abdomen wholly shining. Femora black, at the tip reddish yellow; anterior and middle tibiæ reddish yellow, with a black ring; hind tibiæ black, the base somewhat broadly, the tip narrowly, reddish yellow; the first two pairs of tarsi yellow, their last joint black, hind tarsi black, the third

and fourth joints yellowish. Tegulæ white; halteres yellowish, their heads above black. Wings rather long, dilutely yellowish or subfuscous, more yellowish toward the base, veins at the base yellowish, on the outer part darker; stigma but little darker.

This description is that of Loew for *C. cyanescens*, which applies closely throughout to specimens from Connecticut and New Hampshire, with the important difference that there is, in mine at least, a moderately broad, opaque, black cross-band on the second abdominal segment. I can hardly think that Loew would have overlooked this character, but yet, until specimens are obtained without this band, and differing otherwise specifically, I prefer to consider my specimens as belonging to this species. With my White Mountain specimens I obtained several females, which evidently belong to the same species. Their description is as follows:

♀. Blackish blue, shining; pile everywhere short, on the thorax and scutellum black, on the abdomen white. Front narrow, plane, gently fossulate above the base of the antennæ. Antennæ reddish yellow, third joint large, oval; arista black, plumose. Face black, lightly pollinose, the moderately projecting tubercle, together with the oral margin in front, luteous. Sides of the thoracic dorsum and the margin of the scutellum, with black bristles. Abdomen wholly shining. Front and middle legs luteous, last joint of all the tarsi black, the middle femora and tibiæ subfuscous near the middle; hind legs black, the base and tip of both femora and tibiæ luteous, the third and fourth joints of the hind tarsi fuscous-luteous. Tegulæ white; halteres wholly light yellow. Wings yellowish, the veins fuscous toward the outer part, stigma dilutely lutescent.

This description, it will be seen, is almost precisely like that of *C. plumata*, as given by Loew, except that he describes the antennæ as moderate in size, whereas in my specimens they are unusually large for a *Chilosia*.

Chilosia capillata.

Chilosia capillata Loew, Centur., iv, 65.
Cartosyrphus lamprurus Bigot, Annales Soc. Ent. Fr., 1884, 552.

Habitat.—District of Columbia (Lw.), Virginia!

♂. Length, 7^{mm}. Shining metallic green. Eyes bare. Antennæ yellowish red, first joint and outer end of third black; arista bare (pubescent only under a strong lens), black. Face shining black, in profile with a long concavity, the tubercle nose-like, projecting considerably forwards; on the sides above pollinose, extending across as a band below the antennæ. Frontal triangle a little swollen, gently pitted, with long yellowish pile. Dorsum of thorax, pleuræ, and scutellum clothed with rather long yellowish pile. Scutellum without bristles on its border, transversely grooved before the margin above. Abdomen shining metallic green, the second and third segments, except the broad anterior angles, opaque, or subopaque, black; pile light yellowish, or

whitish in front. Legs yellowish red; all the femora, except the tip, and the last two joints of all the tarsi, black; hind metatarsi, and the hind tibiæ in the middle, fuscous. Tegulæ yellowish white; halteres reddish yellow. Wings cinereous hyaline; veins reddish yellow, on the outer part and behind black; stigma yellow.

Six specimens, Virginia (Mr. Theo. Pergande).

Chilosia comosa.

Chilosia comosa Loew, Centur., iv, 66.

Habitat.—Colorado!, English River, Winnepeg (Lw.).

♂. Length, 6mm. Shining metallic green, with rather long yellowish pile. Frontal triangle large, with blackish pile. Face shining black, lightly pollinose on the sides and above. Antennæ rather small, first joint black, second and third joints obscurely red; arista black, bare. Eyes bare. Scutellum without black bristles. Abdomen wholly shining, but less so on the anterior segments. Legs black; tip of femora, base and tip of tibiæ, yellowish red. Wings cinereous hyaline, stigma and veins yellowish, the latter on the outer part and the costa darker.

♀. The pile shorter, the third antennal joint larger and lighter-colored, the tibiæ in larger part, and the tarsi in part, yellowish red.

Two males and one female from Colorado.

Chilosia nigripennis. (Plate II, fig. 14.)

Cheilosia nigripennis Williston, Proc. Am. Phil. Soc. xx, 307.
Cartosyrphus infumatus Bigot, Annales Soc. Ent. France, 1884, 553.

Habitat.—Mount Hood, Oregon!.

♂. Length, 6 to 7 mm. Deep black. Eyes bare. Frontal triangle and face shining black, the former a little fossulate, the latter very slightly excavated below the antennæ, below the tubercle shortly and deeply concave; sparsely blackish pilose. Antennæ small, basal joints black, third joint reddish brown or brown, rounded; arista bare. Thorax black, nearly opaque, with short black pile above, longer on the scutellum and pleuræ; scutellum shining, without bristles. Abdomen short, broadly oval, depressed; opaque velvety black, with a bluish cast; pile on the sides of the anterior segments reddish yellow; anterior angles of the third and fourth segments shining metallic; hypopygium shining. Tegulæ with a blackish border, and a fringe of black pile. Legs wholly black. Wings blackish in front, clearer behind; veins black.

Three specimens from Mount Hood, Oregon.

Chilosia versipellis, n. sp.

Habitat.—Washington Territory!.

♂. Length, 5½ mm. Antennæ small, first two joints black, third subquadrate, reddish yellow; arista bare. Frontal triangle much swollen, fossulate, pile black. Face shining black, with short, sparse pile, gently concave below the antennæ, in the middle forming a very obtuse angular tubercle, thence gently concave. Eyes bare. Thorax black, nearly opaque, with black pile of moderate length. Tegulæ light yellow, with a fringe of light yellow pile; halteres yellow. Abdomen deep velvety

black; the small anterior angles of the third segment, and the fourth segment, except a median stripe dilated in front and not reaching the hind border, shining black. Legs wholly black. Wings with a yellowish tinge; veins yellowish, blackish on the outer part.

One specimen.

Chilosia parva. (Plate II, fig. 13.)

Cheilosia parva Williston, Proc. Am. Phil. Soc., xx, 307, 1882.
Melanogaster ochripes Bigot, Annales Soc. Ent. Fr., 1884, 555.

Habitat.—Oregon!.

♀. Length, 5^{mm}. Shining metallic green, with a brassy reflection. Eyes bare. Front with short blackish pile. Face slightly excavated below the antennæ, the tubercle large, obtuse, the epistoma much less protuberant. Thorax with short, sparse, lutescent pile. Abdomen broadly oval; wholly shining, nearly bare, whitish pubescent toward the end. Legs reddish yellow; the tibiæ with a small brownish ring, and the terminal joints of the tarsi brown; sometimes the anterior femora at the base, the hind femora in large part, and larger rings of the tibiæ, brown or blackish. Wings brownish; stigma luteous; veins black, yellowish at base.

Four specimens.

Chilosia lugubris, n. sp.

Habitat.—California!.

♂. Length, 8 to 10^{mm}. Deep black, moderately shining. Antennæ small, black, the third joint reddish-brown, nearly rectangular above, rounded below; arista black, plumose. Face shining, lightly pollinose, gently concave on upper part. Frontal triangle large, black pilose. Thorax with considerable black pile; on the margin of the scutellum with fine bristly hairs. Abdomen wholly shining, with light-colored pile. Legs black, the knees very narrowly yellowish. Wings with a blackish tint; before the humeral cross-vein quite dark, veins black, stigma yellowish.

Two specimens. The posterior part of the second and third abdominal segments are less metallic or sub-opaque. The eyes are bare. The pile of the thorax, when seen from behind, seems mostly black, from in front, luteous.

Chilosia leucoparea.

Chilosia leucoparea Loew, Centur., iv, 69.

Habitat.—Carolina (Lw.).

♀. Length, 6.5^{mm}. Black; eyes bare, antennæ red, arista very briefly pubescent; face below on each side light colored; humeri light colored; margin of the scutellum testaceous, provided with bristles; legs luteous, femora, except the tip, black. Black, moderately shining; pile short and not abundant, on the disk of the abdomen and at the tip blackish, elsewhere whitish; pile of the vertex a little longer, black. Front narrow, plane. Antennæ wholly red, third joint rounded oval; arista black. Face black, shining, above strongly excavated, below

pallid on each side; tubercle rather large, obtuse. Dorsum of thorax and scutellum roughened; abdomen very lightly punctulate, shining. Legs lutescent; femora, except the tip, black; hind tibiæ and metatarsi subfuscous, lutescent at base and tip. Halteres whitish; tegulæ white. Wings subhyaline, lightly cinereous sublutescent, base clearer, stigma more saturate lutescent.—Translation.

ADDITIONAL NORTH AMERICAN SPECIES.

Chilosia frontosa Bigot, Ann. Soc. Ent. de Fr., 1884, 553 (*Cartosyrphus*).—Mexico.

MELANOSTOMA.

Melanostoma Schiner, Wien. Entom. Monatschr., iv, 213, 1860.

Medium size, exceptionally large, species, thinly pilose or nearly bare, metallic black or black green; the abdomen with lighter-colored spots or bands, usually slender. Head hemispherical. Antennæ short; third joint oval or a little elongate; arista basal, bare. Face distinctly tuberculate, nearly bare, always black or black-green, never in ground color yellow, though frequently with whitish dust. Eyes bare, contiguous in the male. Thorax shining, never with yellow or reddish markings. Abdomen elongate, slender, rarely much oval, considerably flattened. Legs simple, the hind metatarsi sometimes a little thickened. Wings rather large, extending beyond the abdomen; marginal cell open; third vein nearly straight; outer anterior angle of first posterior cell acute.

TABLE OF SPECIES.

1.—Legs red, not very slender, the hind metatarsi a little thickened; third abdominal segment scarcely at all narrowed behind; second, third, and fourth segments with metallic cross-bands, the last not interrupted; wings only a little longer than the abdomen . . . . . **rufipes.**

Legs more or less black; or, if without black, slender, and the hind metatarsi not at all thickened 2

2.—Legs quite slender, the metatarsi of the male not thickened, abdomen in the male with three pairs of reddish-yellow spots 3

Hind metatarsi of the male always somewhat thickened; bands of abdomen metallic or greenish, not reddish-yellow 4

3.—Face with a prominent tubercle; abdomen of male narrow, elongate, broadest at tip of fourth segment, spots elongate . . . . . **angustatum.**

Tubercle of face not at all prominent, indistinct; abdomen not elongate, not broadest at tip of fourth segment, spots quadrate; in female oval with four pairs of triangular spots . . . . . **mellinum.**

4.—The pollen of the face leaves small circular confluent spots, ripple-like, of the ground color; second abdominal segment distinctly broader behind, **tigrinum.**

The pollen of the face is uniform, or if somewhat ripple-like, not composed of circular spots 5

5.—Pollen of face somewhat striate on the sides; pile of thorax dusky . **obscurum.**

Pollen of face uniform; pile of thorax whitish 6

6.—Abdomen slender . . . . . **cœrulescens.**

Abdomen oval (*Syrphus simplex*).

For additional species, see descriptions.

Melanostoma (?) rufipes.

Chilosia rufipes Williston, Proc. Am. Phil. Soc., xx, 306, 1882.

Habitat.—Washington Territory!

♀. Length, 8 to 9 mm. Face shining black, except the prominent tubercle and the cheeks, partially concealed beneath even, whitish pollen. Front a little narrowed above; below the middle a shallow, transverse depression, on each side of which there is a triangular whitish pollinose spot near the eye, continuous along the eye narrowly to the face. Antennæ blackish, third joint a little elongate, reddish on the under side. Thorax metallic green-black, finely punctulate, nearly bare, the pubescence whitish. Abdomen elongate oval, the third segment of nearly equal width throughout, not narrowed behind; first segment shining; second segment on the sides with a large triangular spot, extending the whole length of the segment on the sides, light green, moderately shining, elsewhere sub-opaque black, with a slight greenish reflection; third segment similar, but the spots more narrowly separated; on the fourth segment the spots are confluent, forming an entire cross-band, concave behind, the remainder of the segment shining black; remaining segments wholly shining greenish. Legs dark red, rather stout; the hind femora, or all the femora, more or less brown or blackish at the base; hind metatarsi a little thickened. Wings short, projecting but little beyond tip of abdomen, nearly hyaline; stigma dilutely yellowish.

Four specimens, Washington Territory.

Until the male of this species is known, its position is somewhat doubtful. Its relationship to Chilosia is very strong, but the distinctly-banded abdomen would seem to remove it from that genus; possibly it is a Platychirus. With these four specimens is a fifth, agreeing throughout in every respect with the others, except that the femora are a little darker, and the abdomen, except the first segment, is of a uniform deep red. The color seems not to be due to immaturity.

Melanostoma tigrinum. (Plate III, fig. 8.)

Melanostoma tigrina Osten Sacken, West. Dipt., 323.

Habitat.—Washington Territory, California, Colorado, Arizona!

♂. Length, 6 to 9 mm. Face and front dark metallic green, the former with white pollen, forming transverse, irregular dotted ripples, the intervals of which show the ground color; the cheeks and a stripe running over the facial tubercle are bare of pollen; facial tubercle obtusely projecting. Antennæ black, third joint and arista brown, or reddish. Front faintly and evenly grayish pollinose and with erect black pile; vertical triangle metallic green, with black pile. Thorax metallic bluish green, clothed with dull grayish pile, more whitish on the pleuræ. Halteres brownish. Abdomen elongate-elliptical, broadest at the hind margin of the second segment; first segment greenish black; the second velvet-black opaque, the lateral edges metallic olive green with a small

subtriangular expansion; third segment anteriorly with an interrupted metallic greenish cross-band, nearly half as broad as the segment, but expanded on the sides along the whole lateral margin; the posterior half of the segment is of a velvet-black, which does not quite reach the lateral margin; the fourth segment is like the third except that the olive green cross-band is not interrupted, or only sub-interrupted, and connected by a longitudinal stripe of the same color, cutting through the velvet-black portion, with the narrow hind margin of the segment; thus the velvet-black on this segment forms a broad, interrupted cross-band, narrowly reaching the lateral margin; fifth segment and hypopygium metallic green. Femora metallic green; knees yellowish brown; tibiæ yellowish brown or brownish yellow at the base, darker toward the tip, especially of the last pair; tarsi black, first joint of the middle tarsi brown; first joint of the hind tarsi incrassate. Wings subhyaline; stigma brownish yellow.

Six specimens from the Pacific regions, four from Colorado, and three from Arizona, I have examined, and it is a little singular that only males are yet known.

Melanostoma obscurum.

Syrphus obscurus Say, Amer. Ent., i, pl. xi; Compl. Wr. i, 23; Wiedemann, Auss. Zw. Ins. ii, 131 (translation from Say).

Melanostoma obscura Osten Sacken, Cat. Dipt., 121.

Habitat.—Atlantic States!

♂, ♀. Length, 6 to 8mm. Head metallic greenish black, shining; face, except the tubercles and cheeks, thinly covered with grayish pollen, on the sides forming indistinct ripples, through which the ground color shows more plainly; tubercle not prominent, not jutting so far forwards as the epistoma. Antennæ black, third joint brown, more or less reddish below, or even wholly reddish. Frontal and vertical triangles more shining, with black pile. Thorax shining greenish black, pile blackish on dorsum, on the scutellum intermixed with yellowish, on the pleuræ wholly yellowish. Abdomen velvety black, narrowly oval, the second segment a little broader behind; first segment metallic, shining; second segment on the sides with a semi-oval bronze spot, extending on the lateral margins the whole length of the segment; third and fourth segments each with a large metallic, somewhat coppery, triangular spot on each side of the base; third segment with a small triangular spot in the middle behind, sometimes extending slenderly forward; fourth segment with a median stripe dilated on the hind margin; remaining segments shining. Hind legs blackish, the tibiæ and tip of femora yellowish or brownish; front and middle legs yellowish red, femora at base, and tip of tarsi, black; hind metatarsi in the male slightly thickened. Wings nearly hyaline.

Six specimens: Mount Washington (William Patton, G. Dimmock), Connecticut, and Pennsylvania (Keen).

Melanostoma cœrulescens, n. sp.

Habitat.—Colorado!

♂. Length, 8 to 9mm. Face deep shining greenish blue; except the tubercle and cheeks, evenly covered with grayish pollen. Face in profile considerably projecting, the tubercle large; frontal triangle with long blackish pile, vertical triangle with light-colored pile; cheeks concave from before backwards below. Antennæ black, third joint brown, more or less yellowish below. Thorax bright shining metallic greenish blue, pile grayish white. Abdomen rather slender and elongate, the first and second segments of nearly equal width throughout, thence gradually narrowed to the end of the fourth segment; first segment greenish black; second segment subopaque black, on the sides in front broadly shining greenish blue, which color extends back very narrowly to the hind margin of the segment; near the middle of the segment on each side there is a small yellowish or whitish spot; third segment in the middle and behind opaque black, on the sides, on the anterior half or two-thirds, a large yellowish or whitish spot, separated from the front border by a shining space; fourth segment similar, its hind border, the fifth segment, and hypopygium, metallic shining green. Legs brownish or blackish, outer half of front and middle femora and the base of all the tibiæ reddish yellow; hind femora with a row of black bristly hairs behind; hind metatarsi thickened. Wings subhyaline; stigma brownish yellow.

Melanostoma mellinum. (Plate III, fig. 9.)

Musca mellina Linné, Fauna Suec., 1821; Scopoli, Entom. Car., 934; Schrank, Ins. Austr., 910.

Scæva mellina Fabricius, Syst. Antl., 251, 12; Fallen, Syrph., 46, 20; Zetterstedt, Dipt. Scand., ii, 759, and viii, 3153, 62.

Syrphus mellinus Fabricius, Spec. Ins., ii, 433, 61; Entom. Syst. iv, 308, 110; (?) Meigen Syst. Beschr., iii, 331, 85; Schiner, Dipt. Austr. Verh. Z. B. Ges., vii, 355.

Scæva scalaris Fabricius, Antl., 252, 14; Zetterstedt, Dipt. Scand., ii, 760, and viii, 3154, 63.

Syrphus scalaris Panzer, Fauna, xlv, 20; Meigen, Syst. Beschr., iii, 330, 83; Fabricius, Ent. Syst., iv, 308, 112.

Syrphus Iris Meigen, Syst. Beschr., iii, 320, 67.

Syrphus mellarius Meigen, Syst. Beschr., 328, 81.

Syrphus melliturgus Meigen, Syst. Beschr., iii, 329, 82.

Melanostoma mellina Schiner, Fauna Austr., i, 291.

Melanostoma scalaris Osten Sacken, Cat. Dipt., 121.

? *Melanostoma pruinosa* Bigot, Annales Soc. Ent. de Fr., 1884, 79.

Habitat.—Europe, North America!

♂, ♀. Length, 6 to 7mm. Shining metallic or black green. Face perpendicular, lightly dusted on the sides with whitish; tubercle small. Frontal triangle a little prominent, gently pitted in the middle; front of the female but little narrowed behind, below the middle with a broad shallow transverse depression, on either side of which, near the eyes, whitish dusted, below narrowly connected with the dust of the face; elsewhere the front is shining. Antennae blackish brown, the third

joint below often yellowish, sometimes the yellow prevails on the seco joint, or rarely the whole antenna may be yellowish; arista yellow base. Abdomen of the male with three pairs of large yellow spots, t first pair usually smallest and near the middle of the segment; seco pair usually the largest, quadrangular; third pair similar, but smalle these reddish yellow spots leave only the opaque black as a narr median stripe and posterior cross-band; hind border of fourth, and t fifth segment, shining. Abdomen in the female more oval, wholly sh ing, with four pairs of red or yellowish spots; the first pair small, each side of the middle, and not touching the lateral margins, seco and third pairs touching the anterior margin, in shape like a right-ang triangle, the point directed back and broadly rounded; on the fif segment smaller, nearly contiguous. Legs variable, reddish yellow (v *scalare*) with brownish rings on the hind, or on all the tibiæ; or sometim the legs, except the front pair, almost wholly brownish (var. *mellinu* the base of the tibiæ lighter. Hind metatarsi in male not thicken Wings tinged with brownish yellow, sometimes faintly, at other tim deeply.

About 100 specimens from Europe, New England, Kansas, and t Pacific States. A very variable species in the color of the antennæ, le wings and abdominal spots, which explains the number of its syn nyms.

As in Europe the species is very common; of them Schiner says (l. c "Die Lieblings aufenthalt dieser kleinen, schmalleibigen munter Thiere sind Rohrbestände, doch finden sie auch an Bächen, in feucht Wiesen und überhaupt überall, wo es üppigen Graswuchs und B men gibt. Ich habe tausende von allen möglichen Standorten einget gen, sie fehlen auf keiner Excursion und langweilen endlich den arm Dipterologen, da sie scheinbar immer neu, bei genauerer Untersuchu doch weiter nichts als Varietäten derselben verändlichen Art scheine

The only difference that Bigot's description of M. *pruinosa* (♀) sho is "abdomen d'un noir opaque, base et extrémité un peu luisantes."

"*M. gracilis* Meigen and *M. maculosa* Meigen, both European, a stated to occur in North America by Mr. Walker, List, etc., iii, 588, 5 Mr. Verrall informs me that 'those two species are synonyms of *sc aris* Fab. [*M. mellinum*]. But Mr. Walker's *Syrphus maculosus* has t representatives in the British Museum, both *Platychiri*, one resembli *P. immarginatus* Zett., the other resembling *P. scambus* Staeger.'" Ost Sacken, Cat. Dipt., 122.

Melanostoma angustatum, n. sp. (Plate III, fig. 7.)

Habitat.—Washington Territory!

♂. Length, 9 to 10^{mm}. Allied to *M. mellinum*, but the face is more p jecting, and the abdomen is longer and more slender. Face shini metallic greenish black, lightly dusted with white, nearly perpendicul in the middle with a rather prominent, small tubercle; cheeks conv below. Frontal triangle gently swollen, with a small pit in the midd

and with black pile. Antennæ reddish yellow, the third joint at the outer end blackish. Thorax and scutellum bright metallic green. Abdomen narrow, elongate, attaining its greatest width at the end of the fourth segment; first segment, and the front part and sides of the second, bronze green, not much shining; second segment in the middle with two small oval yellow spots, behind subopaque black; third, with two elongate yellow spots, reaching from the front margin to beyond the middle of the segment, and touching the lateral margins in front; fourth segment similar, but the spots a little less elongate, and the posterior part and lateral margins of the segment shining green; the nearly-concealed fifth segment and the hypopygium shining green black. Legs sometimes wholly yellow, except a brownish ring on the front tibiæ; usually the front and middle femora and tibiæ with broad brown rings, and the hind femora and tibiæ with broad black rings; the front tarsi lightly, the hind tarsi except the tip of the first joint, darker, brownish; hind metatarsi scarcely at all thickened. Wings tinged with brownish, the stigma yellow.

Five specimens, Washington Territory (H. K. Morrison).

Melanostoma trichopus.

Syrphus trichopus Thomson, Eugenies resa, etc., 502.

Habitat.—California (Thomson). Niger, facie, abdominis maculis lateralibus scutelloque plumbeis, tibiis tarsisque anterioribus dilute fuscis. ♂. Long. 8–9 mill. Patria, California.

S. fenestrato MACQ. simillimus, thorace haud viridi, costa in apice ipso excurrente distinctus. Caput hemisphæricum, inferne breviter rostrato-productum, infra antennas vix impressum, tuberculo supra clypeum parvo; occipite opaco æneo-nigro; oculis fronte late cohærentibus, inferne ad os haud descendentibus, margine postico vix sinuato, albido-pruinoso; fronte supra antennas dense nigro-pilosa; epistomate nitido, æneo, lateribus parcius albido-pubescenti, apertura oris oblonga, antice constricta; genis linea obliqua impressa ab epistomate discretis; gula plumbea, pallido-pilosa. Antennæ basi paullo distantes, divaricatæ, subdeflexæ, nigræ, articulo 3:o elliptico brunneo, seta basi nigricante. Thorax plumbeo-niger, subopacus, fusco-pilosus; scutellum plumbeo-virescens, longius nigro-pilosum. Alæ abdomine longiores, griseo-hyalinæ, cellula post-costali obscure flava; costa in ipso apice alæ desinente, cellula discoidali nervum transversum ordinarium in quarta sua anteriore parte excipiente, nervo exteriore haud flexuoso et terminali apice extus appendiculo parvo instructis, hoc nervo exteriore basi inferno flexuoso; nervo spurio ante apicem cellulæ discoidalis abrupto, brachii abscissa 4:o ta nervo transverso breviore. Halteres nigri. Abdomen thorace dimidio longius, apicem versus angustatum, sat dense et longe præsertim basi fusco-pilosum, atro-holosericeum, segmentis 5:o brevissimo et 6:o totis, 2–4 maculis lateralibus prope basin plumbeo-schistaceis, his fascias sensim minus late interruptas formantibus. Pedes nigri, femoribus omnibus tibiisque posterioribus sate longe pilosis,

genubus, tibiis tarsisque anterioribus brunneo-fuscis. Pectus nitidum, plumbeum, parcius pilosum, plumula subalis et peritremate spiraculorum albidis.—Thomson.

I cannot identify this species with any of the foregoing, though it comes nearest to *M. tigrinum*. It is more than probable that it will be found among those described by Bigot.

The following species, described by Mr. Bigot, probably belong to this genus; yet *Platychirus* should not be lost sight of in endeavoring to identify them. It is very probable that some of them are synonyms of species already described, but my material and patience are not sufficient to determine them. *M. pruinosum* I have given as a probable synonym of *M. mellinum*.

Melanostoma ? pruinosum.

Melanostoma ? pruinosa Bigot, Ann. Soc. Ent. Fr., 1884. 79.

Habitat.—California (Big.).

♀. Long. 8^{mm}. *Antennis fulvis, apice fuscis; fronte et facie nigris, nitidis, utrinque flavo pruinosis; thorace nigro, obscurè œnescente; calyptris albis, halteribus fulvis, clavâ fuscâ; abdomine nigro opaco, segmento* 2°, *utrinque, maculâ obliquâ, oblongâ,* 3° *et* 4°, *maculis utrinque latis, fere trigonis,* 5°, *lunulis lateralibus flavis; pedibus flavidis, femoribus tibiisque fusco annulatis, sæpè evanescentibus, tarsis posticis fuscanis, incisuris laté flavidis; alis hyalinis.*

Antennes fauves, bords supérieurs, extrémité et chète, bruns; front et face d'un noir luisant, couverts de chaque côté par une pruinosité jaunâtre qui s'étend notablement au-dessus des antennes; thorax, écusson d'un noir luisant à reflets bronzés; flancs à duvet blanchâtre; cuillerons blancs, balanciers fauves, massue brunâtre; abdomen d'un noir opaque, base et extrémité un peu luisantes, 2e segment avec deux macules obliques, ovaloïdes, divergentes du côté antérieur, 3e et 4e, avec deux larges macules basilaires, trigonales, joignant les côtés, d'un jaune fauve; pieds testacés, cuisses et tibias avec des anneaux brunâtres parfois peu distincts, tarses avec l'extrémité brunâtre, les postérieurs plus foncés avec les articulations largement jaunâtres; ailes hyalines. Antennes, 3e segment ovale; abdomen étroit; ailes dépassant à peine son extrémité. Californie—2 specim.

Melanostoma ? pictipes.

Melanostoma ? pictipes Bigot, Ann. Soc. Ent. Fr., 1884, 78.

Habitat.—California (Big.).

♂. Long, 9^{mm}. *Nigra, parum nitida. Antennis castaneis; fronte nitidâ; facie, utrinque cinereo pruinosâ; calyptris et halteribus fulvis; abdomine nigro opaco, basi albido pilosula, apice et utrinque nitido; maculis basalibus, utrinque, ferè trigonis, cinereis parum metallescentibus; pedibus fulvis, femoribus tibiisque latè fusco nigro annulatis tarsis apice infuscatis, posticis fuscis; alis ferè hyalinis, maculâ stigmaticali testaceâ.*

Antennes noires, 3e segment et chète d'un fauve obscur; front noir, luisant à poils noirs; face noire, callosité luisante, côtés à reflets grisâ-

tres; thorax, écusson, d'un noir un peu bronzé, couverts d'un duvet clairsemé roussâtre, flancs à duvet gris, une petite touffe de poils blancs sous les cuillerons, ces derniers, ainsi que les balanciers, testacés; abdomen d'un noir opaque, muni de duvet blanchâtre, principalement à sa base, 1er segment, bords latéraux, marges des 4e et 5e, luisants, 3e et 4e, de chaque côté, avec une macule basilaire trigonale joignant les côtés et d'un gris d'acier; pieds fauves, cuisses et tibias avec un large anneau noirâtre, tarses noirs à l'extrémité, postérieurs châtains; ailes presque hyalines, macule stigmatique étroite, allongée, roussâtre. Antennes, 3e segment ovalaire, oblong; abdomen étroit; ailes ne dépassant pas son extrémité. Californie—4 specim.

Melanostoma ? bicruciatum.

Melanostoma ? bicruciata Bigot, Ann. Soc. Ent. Fr., 1884, 79.

Habitat.—California (Big.).

♂ Long. 7mm. *Antennis fulvis, apice fuscis; facie et fronte nigris, nitidis, utrinque cinereo pruinosis; thorace scutelloque nigris, obscurè æneascentibus; calyptris et halteribus testaceis; abdomine nigro opaco, basi et apice anguste nitido, utrinque maculis tribus latis, quadratis, fulvis; pedibus fulvis, femoribus tibiisque latè fusco pallido annulatis, tarsis apice parum infuscatis; alis hyalinis.*

Antennes fauves, brunes en dessus et à l'extrémité du 3e segment, chète brun; front d'un noir luisant; face de même avec reflets d'un gris pruineux sur les côtés; thorax, écusson, noirs à reflets bronzés; cuillerons et balanciers testacés; abdomen d'un noir opaque, 1er segment, bords postérieurs des 4e et 5e luisants, six larges macules carées, atteignant les côtés, fauves; pieds fauves, cuisses et tibias largement annelés d'un brun lavé, extrémité des tarses brune; ailes hyalines, stigmate fort pâle. Antennes, 3e segment ovalaire; abdomen étroit, oblong, ailes ne dépassant pas son extrémité. Californie.—1 specim.

Melanostoma ? rostratum.

Melanostoma ? rostrata Bigot, Ann. Soc. Ent. Fr., 1884, 80.

Habitat.—California (Big.).

♀. Long. 7mm. *Facie prominente, obtusâ. Antennis fulvis, basi et supernè infascatis; fronté et facie nigro-nitido, utrinque cinereo pruinosis; thorace scutelloque nigris, obscurè æneis halteribus pallidè testaceis; abdomine nigro opaco, apice augusté nitido, lineâ tenui, dorsali, cinerascente, utrinque maculis tribus latis, ferè quadratis, cinerascentibus et obscurè testaceo pictis; pedibus fulvis, femoribus posticorum intermediorumque, tarsis basi, apice, nigris, tibiis, late pallide fusco annulatis pedibus posticis nigris, geniculis fulvis; alis hyalinis maculâ stigmaticali elongatâ, testaceâ.*

Ressemble à la *M. ? pictipes*, mais en diffère surtout par la face, qui se prolonge sensiblement en avant sous la forme d'un obtus. Antennes fauves, noirâtres à la base et en-dessus, chète brun; front d'un noir luisant ainsi que la face, celle-ci à reflets gris sur les côtés; thorax, écusson, noirs à reflets bronzés, flancs à duvet blanchâtre; cuillerons

blancs, balanciers testacés; abdomen d'un noir mat, premier et dernier, segments un peu luisants, une ligne médiane, étroite, grisâtre, et, latéralement, trois larges macules carrées, atteignant les bords, d'un gris à reflets fauves; pieds antérieurs et intermédiaires fauves avec, las base des cuisses, l'extrémité des tarses, noires, un large anneau brunâtre aux tibias, pieds postérieurs noirâtres avec les genoux fauves; ailes hyalines; macule stigmatique d'un jaunâtre pâle; 3e segment des antennes allongé, ovaloïde; abdomen étroit, déprimé, plus court que les ailes. Californie.—1 specim.

Melanostoma ? pachytarsis.

Melanostoma ? pachytarsis Bigot, Ann. Soc. Ent. Fr., 1884, 80.

Habitat.—California (Big.).

♀. Long. 7mm. *Antennis fulvis, apice nigris; facie et fronte nigro nitido; thorace scutelloque nigris, obscurè æneis; calyptris albis, halteribus pallidè flavis; abdomine nigro, 2° segmento maculis duo rotundatis, 3° et 4° basi, utrinque, maculis ferè trigonis, 5° basi, lunulis duo fulvis; pedibus fulvis, metatarso postico parum incrassato, femoribus tibiisque posticis laté nigro annulatis, tarsis omnibus nigris, incisuris fulvis; alis hyalinis, maculâ longâ stigmaticali pallidè testaceâ.*

Antennes fauves, extrémité du 3e segment et chète noirs; front et face d'un noir luisant; thorax, écusson, noirs avec reflets bronzés; cuillerons blanchâtres, balanciers d'un jaune pâle; abdomen noir, premier et dernier segments luisants, 2e avec deux points ronds, 3e et 4e avec, de chaque côté, une large macule trigonale basilaire, n'atteignant pas les bords latéraux, le sommet dirigé en arrière, 5e avec deux lunules basilaires fauves; pieds fauves, cuisses et tibias postèrieurs largement annelés de noirâtre, tibias antérieurs et intermédiaires avec les pâles vestiges de semblables anneaux, tous les tarses noirâtres avec leurs articulations fauves; ailes presque hyalines, stigmate étroit, allongé, d'un jaunâtre pâle. Antennes, 3e segment court, ovaloïde; abdomen étroit, déprimé; ailes le dépassant notablement; métatarses postérieurs légèrement épaissis. Californie.—1 specim.

ADDITIONAL NORTH AMERICAN SPECIES.

Melanostoma ? anthracoides Bigot, Ann. Soc. Ent. Fr., 1884, 82.—Panama.
Melanostoma ? annuliferum Bigot, ibid., 84.—Mexico.
Melanostoma ? cruciatum Bigot, ibid., 81.—Mexico.
Melanostoma ? quadrinotatum Bigot, ibid., 77.—Mexico.

PYROPHÆNA.

Pyrophæna Schiner, Wien. Ent. Monatschr., iv, 213, 1860.

Medium sized, black, nearly bare species, with ferruginous or orange yellow bands on the abdomen. In structure closely allied to Melanostoma and Platychirus, but distinguished by the much larger, more promi-

nent vertical triangle, the ocelli being situated further forward, by the flattened abdomen, which is long oval in shape and more narrowed towards its base, so that its greatest width is attained at the end of the third segment; the wings also are shorter and broader, scarcely projecting beyond the end of the abdomen. The tarsi of the male may be either flattened or simple. Type of genus *P. ocymi* (Fabr.) Schiner.

Our two species are also European, and the only known ones in the genus. The genus, taxonomically, is equivalent to Melanostoma and Platychirus combined. The flies are apparently rare; I have but two specimens collected in this country.

TABLE OF SPECIES.

Abdomen largely reddish yellow; front and middle tarsi of the male flattened..**ocymi.**
Abdomen black, with two reddish yellow spots on the third segment; front metatarsi of male not flattened.....**rosarum.**

Pyrophæna rosarum.

Syrphus rosarum Fabricius, Mantissa Ins., ii, 341, 71; Entom. Syst. iv, 307, 109; Meigen, Syst. Beschr. iii, 338, 94; Panzer, Fauna, cviii, 14; Macquart, Hist. Nat. Dipt. i, 545, 39; Walker, Ins. Brit. i, 295, 30; Schiner, Verh. Z. B. Ges. vii, 357.

Syrphus noctilucus Panzer, Fauna, lxxii, 24 (male).

Scæva rosarum Fabricius, Antl., 351, 11; Fallen, Syrph. 47, 22; Zetterstedt, Dipt. Scand. ii, 755, and viii, 3152, 58.

Pyrophæna rosarum Schiner, Wien. Ent. Monatschr., iv, 213; Fauna Austr. i, 298; Osten Sacken, Cat. Dipt., 122.

Habitat.—Europe, North America (O. S.).

♂, ♀. Length, 8 to 9^{mm}. Antennæ black, the third joint below somewhat lighter colored. Face metallic blue, straight, the tubercle little prominent. Thorax with two approximate whitish stripes. Abdomen velvet black, with the exception of two reddish yellow spots on the third segment, and the last segment, shining. Legs black, yellow at base of tibiæ. Wings tinged with grayish, in the middle with a darker spot. Thorax shining dark green; scutellum with a blue reflection. In the female the legs chiefly steel-blue; four front tibiæ yellow or yellowish-brown, their tarsi almost wholly yellow.—Translation.

I do not know this species.

Pyrophæna ocymi. (Plate III, figs. 13, 13*a*, 13*b*, 13*c*.)

Syrphus ocymi Fabricius, Syst. Ent., iv, 309, 114; Panzer, Fauna, lxxxii, 18; Meigen, Syst. Beschr. iii, 337, 93 (female); Macquart, Hist. Nat. Dipt., i, 546, 40; Schiner, Verh. Z. B. Ges., vii, 362.

Syrphus lobatus Meigen, Syst. Beschr., iii, 336, 92 (male).

Scæva ocymi Fabricius, Antl., 252, 18; Fallen, Syrph., 48, 23; Zetterstedt, Dipt. Scand., ii, 754, and viii, 3152, 57.

Syrphus granditarsus Walker, Ins. Brit., i, 295, 29.

Platychcirus ocymi Stæger, Kröj. Tidsskr., iv, 320.

Pyrophæna ocymi Schiner, Wien. Ent. Monatschr., iv, 213; Fauna Austr., i, 297.

Habitat.—Europe, North America!

♂, ♀. Length, 8 to 9^{mm}. Metallic black. Antennæ brownish black, third joint convex below, nearly rectangular at the end above. Face

bluish black, in the female more metallic blue, with thin, whitish dust, nearly perpendicular in profile with a prominent, well-defined tubercle, and a smaller one below it. Frontal and vertical triangles with black pile; front in the female with black pile, except at the vertex. Dorsum of thorax with three opaque stripes in the male, wholly bright shining metallic green in the female. Scutellum shining bluish metallic green. First segment of the abdomen shining black; second segment with an anterior black cross-band, convex or dilated in the middle behind; in the male the remainder of the second segment, the third, and the anterior part of the fourth, are orange yellow; in the female on the posterior angles of the second with smaller, of the third with larger, black spots, the fourth and fifth segments with an interrupted, anterior, not broad, cross-band. Legs in the male black, with the base of all the tibiæ yellow; the front metatarsi extraordinarily dilated, and with a process directed inward, the remaining joints as usual; the middle metatarsi also considerably dilated, the remaining joints successively less so; posterior metatarsi a little thickened, somewhat elongate. In the female the legs are reddish yellow, the front tarsi, the last four joints of the middle tarsi, a ring on the hind tibiæ, and the hind tarsi, black, sometimes also a less distinct ring on the hind femora; in structure the legs show no peculiarities. Wings tinged with reddish brown, darker in the middle.

Two specimens from Holland (v. d. Wulp), a single female specimen from Washington Territory (Morrison), and a female from Labrador (Henshaw).

PLATYCHIRUS.

Platycheirus St. Fargeau and Serville, Encycl. Meth.. x, 513, 1825.

Medium sized to rather small species, elongate, nearly bare, black or metallic green, with yellow, reddish, or whitish yellow spots on the abdomen. Wholly like *Melanostoma*, except in the structure of the legs. In the male the tibiæ are more or less dilated in the front pair, the front metatarsi always, and the remaining joints more or less, so; in the female the front tibiæ and metatarsi, though not dilated as in the male, are comparatively broader than those in *Melanostoma*.

TABLE OF SPECIES.

1.—Front tibiæ in the male gradually dilated from the base, the tarsi gradually decreasing in width from the base to the tip; profile of the face only gently concave above the tubercle, the latter small; cheeks convex below . . 2

Front tibiæ of the male slender, suddenly dilated at the tip, metatarsi much dilated, the remaining joints but slightly so; the front femora in the male with a thick row of hairy pile on the posterior side; face in both sexes with a conspicuous tubercle; cheeks concave below . . . . peltatus

2.—Front tibiæ of the male, on the inner side toward the end, somewhat concave, the outer angle produced into a lappet-like process; yellow spots on the abdomen in both sexes very large, leaving only a median stripe and cross-bands; hind femora and tibiæ yellow . . . . . **quadratus**

Front tibiæ of the male gently and evenly convex on the inner side, the tip on the outer side less produced, more angular; spots of abdomen smaller, hind legs chiefly black **3**

3.—Front femora in the male with a row of five to seven long bristly hairs; second abdominal segment with large, the fifth with small yellow spots . . . **chætopodus**

Front femora without such bristles; second segment of the abdomen in both sexes with a small rounded spot on each side, fifth segment in the male without yellow . . . . . **hyperboreus**

For other species, see description.

Platychirus quadratus. (Plate III, figs. 10, 10 *a*.)

Scæva quadrata Say, J. Acad. Phil., iii, 90, 4, Compl. Wr., ii, 79.
Syrphus quadratus Wiedemann, Auss. Zw. Ins., ii, 135, 32.
Syrphus fuscanipennis Macquart, Dipt. Exot., 5e Suppl., 95, 58.
Platychirus quadratus Osten Sacken, Cat. Dipt., 122.

Habitat.—Eastern, Middle and Pacific States!

♂, ♀. Length, 7mm. Face deep shining green, thickly covered with yellowish pollen; in profile a little receding, tubercle very little prominent. Antennæ brownish black. Frontal triangle yellowish pollinose and with black pile; front in female shining, with a somewhat coppery reflection, pollinose on the sides below, and dilated inwardly near the middle. Thorax deep shining metallic green; pleuræ with whitish or grayish pollen. Scutellum like the thoracic dorsum. Abdomen with three large pairs of quadrate, orange-yellow spots, leaving a longitudinal stripe and three cross-bands shining black, which in some specimens are slender, brown, or even obsolete; in the female the black cross-bands are often dilated in the middle, and narrowed on the sides; the fifth segment with a median black stripe, dilated behind, or wholly orange colored; sixth segment in female small, reddish yellow; hypopygium shining greenish black. Legs reddish yellow; the first and last two joints of the hind tarsi black; the hind tibiæ sometimes with one or two blackish rings. In the male the front tibiæ are gradually dilated, convex on the outer border below, gently concave on the inner side, the outer angle below produced downward; tarsi dilated, gradually narrowed from base to tip; the hind metatarsi in the male also thickened. Wings with a brownish tinge across the middle.

Numerous specimens from New England, Kansas, California, &c.

Platychirus hyperboreus. (Plate III, fig. 12.)

Syrphus hyperboreus Staeger, Groenl. Antl., 362, 30.
Scæva hyperborea Holmgren, Ins. Nordgrœnl., 100.
Platycheirus hyperboreus Staeger, Krõj. Tijds., N. Rakke, i, 346.

Habitat.—Greenland (Stäger), New York (U. S.), Colorado, Pennsylvania, White Mountains!

♂. Length, 8 to 9mm. Deep shining metallic green. Face rather thickly covered with yellowish gray pollen, leaving only the tubercle and the

cheeks in front more shining. Face somewhat receding in profile, the tubercle inconspicuous; cheeks convex below. Antennæ brownish black. Frontal triangle pollinose, with black pile. Abdomen opaque black; the first and fifth segments and the hypopygium shining greenish black; second segment with a small rounded spot on each side; third segment with a large quadrate spot in front reaching to a little beyond the middle; fourth segment similar, the spots scarcely reaching beyond the middle; fifth segment shining, wholly without yellow. Front legs yellow, the tibiæ gradually and nearly evenly dilated from the base to the tip, the external angle below not produced, metatarsi moderately dilated, thence gradually narrowed to the tip; middle legs yellow, blackish toward the base; hind legs black, the tip of femora, the base and tip of tibiæ, tip of metatarsi and the second and thirds joints, yellow. Wings nearly hyaline; stigma dilutely yellow.

♀. Like the male but the abdominal spots smaller, sometimes wanting on the second segment, the fifth segment also with a pair of spots; the legs with less black, and the fore legs not dilated. The front and middle legs are wholly yellow, and the black on the hind legs confined to a ring on the femora and tibiæ and with the metatarsi blackened.

Six males and one female from Colorado, four females and one male from the White Mountains, New Hampshire, July 25–30, and one female from Pennsylvania (Keen).

This species is closely allied to *P. chætopodus*, but differs in the male in the front femora not having the row of conspicuous bristly black hairs on the outer side and in the spots on the fifth abdominal segment being wanting; in both sexes by the spot on the second segment being small, rounded, or subtriangular.

Platychirus peltatus. (Plate III, figs. 11, 11*a*.)

Syrphus peltatus Meigen, Syst. Beschr., iii, 334.
Scæva albimana Fallen, Syrph., 46, 19.
Scæva peltata Zetterstedt, Dipt. Scand., ii, 747; viii, 4145, 50.
Platycheirus peltatus Stäger, Krõj. Tijdschr., iv, 320; Schiner, Dipt. Austr., i, 295.

Habitat.—Northern Europe, White Mountains, Pennsylvania, New York!, Sitka (Lw.).

♂, ♀. Length, 8 to 9mm. Metallic shining green. Antennæ blackish brown, the third joint somewhat lighter or yellowish below. Face thickly covered with yellowish dust, leaving the tubercle and cheeks in front more shining; in profile, concave below the antennæ, with a prominent tubercle and a smaller one below it, near the oral margin. Frontal triangle bronze colored, but little shining, the pile black; front with a slight coppery or bronze reflection; dusted on the sides below, dilated in the middle so that there is only a narrow shining space between the two. Thorax bright, shining, metallic green. Abdomen in the male opaque black, shining metallic green on the first, tip of fourth, the fifth, and the sixth segments; in the female wholly moderately shining. Second segment with a moderately large yellow spot on each side,

third and fourth with larger quadrate spots, situated on the front part; in the female these spots, except the first pair, are smaller, and in addition, on the fifth segment, there is a small, oval spot on each side in front, which is scarcely apparent in the male. In the male the front femora are yellowish, with more or less black toward the base, and on their posterior part for nearly their whole length there is a row of rather long, thickly set, black pile; the tibiæ yellowish, slender, suddenly and moderately dilated at the tip; the metatarsi elongated and extraordinarily dilated, produced into an acute angle on the inner distal corner; second joint a little dilated, the remaining joints not at all; the first two joints whitish, the remainder reddish yellow. Middle femora of the male black at the base, otherwise yellow; below, near the middle, somewhat excavated, and for a short distance with a row of short bristles; the tibiæ yellow, on the inner side, just before the middle, suddenly narrowed, and again, a little less suddenly, widened before the tip; hind legs blackish brown with yellow knees, their metatarsi thickened, especially toward the base. In the female the legs are simple, only the middle tibiæ slightly narrowed on the inner side and the hind metatarsi a little thickened; the first two pairs of legs nearly wholly yellow, the hind pair, except the base and knee, blackish brown; the spots on the abdominal segments are also some what smaller. Wings hyaline, stigma light yellowish.

Two specimens from Holland, and one male and twenty-five females from the White Mountains, New Hampshire (July 25–30).

Also, several males and females from Pennsylvania (Mr. E. Keen).

Platychirus chætopodus, n. sp.

Habitat.—Washington Territory!.

♂. Length, 8^{mm}. Deep shining metallic green. Face thickly covered with yellowish dust, a small spot on the tubercle bare and shining. Antennæ brownish black. Frontal triangle more greenish, less thickly pollinose, with black pile. Thorax and scutellum bright shining metallic green. Abdomen opaque black, with four pairs of yellow spots; first segment shining greenish metallic; second segment with two large triangular spots, leaving the black nearly the whole width of the segment in front and narrowed behind, on the posterior border a rather narrow black cross-band; third and fourth segments similar, except that the spots are more nearly quadrilateral, the black only a little widened in front, and the posterior bands a little broader, so that in the fourth segment it occupies about one-third of the width of the segment; fifth segment with two yellow spots, leaving only a posterior shining greenish black triangle, extending narrowly to the front margin; hypopygium shining metallic green. Legs yellow; the middle femora with a small blackish spot toward the base, hind femora and tibiæ with a broad black ring, hind metatarsi, except their tip and last two joints of hind tarsi, black; front femora on their hind border with a row of four

or five long bristly black hairs, front tibiæ gradually dilated, the inner border more sinuate than in *P. hyperboreus*, the outer angle at the tip moderately acute, their metatarsi moderately dilated, thence gradually narrowed to the tip of tarsi; hind metatarsi thickened. Wings faintly brownish tinged.

Two specimens, Washington Territory. This species will be distinguished from *P. hyperboreus*, to which it is most nearly allied, by the large spot on the second abdominal segment, by the presence in the male of spots on the fifth segment, by the bristles on the front femora of the male, by the external angle of the front tibiæ not being produced lappet-like. From *P. peltatus*, the front legs in the male and the facial profile will at once distinguish it.

Platychirus ciliatus.

Platycheirus ciliatus Bigot, Annales Soc. Ent. Fr., 1884, 74.

Habitat.—California (Bigot), Colorado!

♂. Length, 8mm. Face nearly uniformly gray pollinose. Third joint of antennæ twice as long as wide, partly reddish. Dorsum of thorax and scutellum shining brassy black. Abdomen contracted in the middle, opaque black; the first segment, the sides of the second, the fifth segment, and the hypopygium, shining metallic. Second segment on the sides with a small spot, third and fourth in front with a larger, oblique lateral spot, yellow. Legs yellow; the front and middle femora in part, the hind pair chiefly, black; front femora on the outer side with a rather dense and long row of black pile; front tibiæ with a tuft of black pile without beyond the middle, considerably dilated on last fourth, squarely truncate at the tip; front metatarsi much dilated, squarely truncate, second joint very short and transversely dilated to the full width of the metatarsus, the next two joints successively less dilated; middle tibiæ arcuate on outer half; hind metatarsi thickened and elongate. Wings hyaline.

♀. Antennæ black. Abdomen with a pair of quadrate spots on the third and fourth segments, the spots on the second small or obsolete. Femora black, except the tip; intermediate, and especially the hind tibiæ, brown in the middle; hind metatarsi elongate.

Three specimens, Colorado (National Museum, Professor Riley's collection). The color of the legs probably varies somewhat. This species is very probably the one described as *P. ciliatus* by Bigot, but as the author omits the most distinctive characters (the structure of the fore legs), and as his types were from California, it will be well to reproduce his description.

P. ciliatus. ♂. Long. 8mm. *Niger. Antennis, segmento 3° subtùs fulvo obscurè notato; facie cinereo pruinoso; thorace scutelloque nitidis, fusco villosis; calyptris et halteribus cinereis, clavâ nigrâ; abdomine nigro opaco, albido longè villosulo, maculis utrinque tribus trigonis, cinereis, segmento 5° nitido; femoribus anticis, subtùs, longè nigro villosis, pedibus anticis intermediisque testaceis, femoribus et tibiis intermediis latè nigro*

annulatis, anticis, latis, testaceis, utrinque nigro marginatis, tarsis anticis, latis, testaceis, basi nigro pariter marginatis, pedibus posticis nigris; alis pallidè cinereis, maculâ stigmaticali pallidè fuscâ.

Noir. Antennes, 3e segment avec une macule fauve en dessous; face assez luisante, à reflets gris; bords des orbites postérieurs à duvet blanc; thorax, écusson, luisants, d'un bronzé obscur avec de longs poils clairsemés brunâtres, flancs à duvet blanchâtre; cuillerons et balanciers grisâtres, massue noire; abdomen d'un noir opaque avec de longs poils clairsemés blanchâtres vers la base, 1er et dernier segments luisants, 2e, 3e et 4e avec, de chaque côté, une macule trigonale grise; cuisses antérieures te stacées avec un large anneau noir, et, en dessous, de longs cils noirs, tibias testacés, élargis, bordés de noir, tarses et métatarses antérieurs, fort élargis, testacés, les derniers bordés de noir, pieds intermédiaires avec les cuisses presque totalement noires, des poils clairsemés blanchâtres aux tibias, un large anneau, tarses à l'extrémité, noirs, pieds postérieurs entièrement noirs, avec les cuisses munies de poils blancs clairsemés; ailes un peu grisâtres, stigmate d'un jaunâtre obscur. Abdomen étroit. Californie.—1 specim.

The legs of Bigot's specimen are more black, and the abdominal spots perhaps lighter colored; otherwise it seems to be similar.

Platychirus Naso Walker, List, etc., iii, 587 (*Syrphus*).—Huds. B. Terr.
Platychirus Pacilus Walker, Dipt. Saunders, 240 (*Syrphus*).

"These are both *Platychiri;* whether they differ from *P. peltatus* and *quadratus*, I am unable to tell, as I had no specimens for comparison when I saw the types in the British museum."—Osten Sacken, Cat. Dipt., p. 244, note 201. These species can hardly be determined from Walker's descriptions, and it does not seem worth while to reproduce them.

LEUCOZONA.

Leucozona Schiner, Wien. Ent. Monatschr., vi, 214, 1860.

Rather large, thickly pilose species; black, with a broad yellow band at the base of the abdomen. Head hemisperical, somewhat broader than the thorax. Antennæ porrect, short, third joint oval; arista basal, bare. Face in both sexes broad, yellow, with black cheeks and median stripe; grayish pollinose, pilose; in profile perpendicular, somewhat protuberant below, produced considerably downwards below the eyes, tuberculate. Eyes pilose, contiguous in the male. Thorax scarcely longer than broad. Scutellum reddish yellow, translucent. Abdomen elliptical, depressed, broadest beyond the middle, not more than twice as long as the thorax. Wings with open marginal cell, third longitudinal vein very gently curved, small cross-vein near base of discal cell, first posterior cell closed some distance before the costa. Type of genus, *L. lucorum* (Linné).

Leucozona lucorum. (Plate III, figs. 6, 6*a*.)

Musca lucorum Linné, Fauna Suec., 1803, 1761.
Conops praecinctus Scopoli, Entom. Carn., 908.
Syrphus lucorum Fabricius, Spec. Ins., ii, 426, 25; Entom. Syst., iv, 291, 46; Meigen, Syst. Beschr., iii, 313, 58; pl. xxx, fig. 27; Macquart, Hist. Nat. Dipt. i, 537, 8.
Eristalis lucorum Fabricius, Antl. 241, 37; Fallen, Syrph., 50, 1; Zetterstedt, Dipt. Scand., ii, 778, and viii, 3166, 1.
Cheilosia lucorum Walker, Ins. Brit., i, 281, 1; Curtis, Brit. Ent., 753.
Leucozona lucorum Schiner, Wien. Ent. Monatschr., vi, 214; Fauna Austr., i, 299.

Habitat.—Washington Territory! Canada (O. S.), Northern and Central Europe.

♂, ♀. Length, 12^{mm}. Antennæ black, third joint oval; arista black. Face gently concave below the antennæ, the tubercle large, obtuse, nearly as low down as the lower border of the eyes; color concealed on the sides beneath very dense white pollen, and yellowish white pile, the middle part and the cheeks bright shining blue black, frontal triangle less dusted. "Front in female yellowish anteriorly, gradually becoming darker behind." Thorax opaque black, thickly covered with reddish yellow pile, beneath which the dark greenish brown pollen leaves three slender black stripes. Pile on the pleuræ white, on the scutellum bushy yellow or orange. Abdomen black, shining, the second segment either wholly light yellow or wholly sub-opaque bluish gray, or light yellow in the middle part and bluish gray on the sides, with a slender black stripe on the middle not reaching the posterior margin; pile long, abundant, yellow and black. Legs black; tip of femora and base of tibiæ whitish yellow, sometimes almost wholly yellow. Wings hyaline with a blackish brown spot, reaching from the base of third posterior cell to the stigma; stigma darker.

Two ♂ specimens, Washington Territory, Colorado.

CATABOMBA.

Lasiophticus Rondani, Prodrome, ii, 137, 1857 (ex parte).
Catabomba Osten Sacken, West. Dipt., 325, 1877.

Rather large species, closely resembling in appearance and structure the genus Syrphus, except that in the male the eyes have an area of enlarged facets above, the front in both sexes remarkably convex, and the hypopygium of the male is very small, concealed entirely beneath the fifth segment of the abdomen. Type of genus, *C. pyrastri* Linné.

In response to a request in regard to the claims of Lasiophticus Rond., for priority over Catabomba, as put forward by Bigot, Baron Osten Sacken has kindly given me his views on the retention of Catabomba, which I take the liberty of reproducing here nearly entire.

"The genus Lasiophticus was characterized by Rondani (Prod. ii, 137), thus: 'It shares the characters of Syrphus and Platychirus, but the former in not having dilated front tibiæ and tarsi, from [illegible] pubescent eyes.' Eleven species were enumerated

londani as belonging to Lasiophticus, including the so-called *topi-* M. (my *S. torvus*), *glaucius* F., *pyrastri* Lin., etc. In other words, he European Syrphus (in the restricted sense of Schiner) that have escent eyes are Lasiophticus Rond. (see Schiner, i, 301).

Now I have shown in my paper on Syrphus (Proc. Bost. Soc., N. , and, before me, Mr. Malm has done the same, that the pubescence on-pubescence of the eyes in Syrphus is a character of altogether ordinate value; I mean to say that if we introduce a subdivision the basis of this character, most evidently allied species, perhaps ely seasonal varieties, like *S. ribesii* and *S. torvus*, are torn asunder, dissimilar forms like *pyrastri* and *glaucius* thrown together. In my ion, therefore, the genus Lasiophticus must be given up.

"The question whether Catabomba is to be maintained or not has hing to do with that of the validity of Lasiophticus. Catabomba was oduced by me on the ground of the peculiar structure of the facets he eyes in the male, of front in both sexes, and of the male genitals. *S. astri*, *S. seleniticus*, and probably also *S. gemellarii* Rond. [*S. melan-oma* (Macq.) v. d. Wulp, also] partake of these characters. The eyes these species are all pubescent, so far as I know; but then a Cata-nba with glabrous eyes may be discovered and will be nevertheless atabomba; it could not be a Lasiophticus Rond.

"I believe, therefore, it would be expedient at present to retain the us Syrphus in the sense of Schiner, and to drop Lasiophticus. It ms to me that we render Syrphus in this restricted sense more hom-eneous if we separate Catabomba from it, just as Schiner separated ucozona and other small genera. General habit and coloring of Cat-mba, as well as its remarkable geographical distribution, confirm in the belief that the species are subject to some peculiar law, and t it is only right to isolate them in our systematic arrangement."

It is true that Rondani used *S. pyrastri* as one of the typical species his genus, and also pointed out one of its special characters—the id front in the male, in his tabular arrangement of the species (Prod. 138); but for all that his genus can not and never would be accepted, cept by the use of characters pointed out by Osten Sacken in his finition of Catabomba. It perhaps might have been better had Baron sten Sacken used the name Lasiophticus instead of Catabomba; the me, however, in itself might become strongly objectionable. Cer-inly the pilosity of the eyes is not a generic character.

Catabomba pyrastri. (Plate IV, figs. 1, 1*a*.)

Musca pyrastri Linné, Fauna Suec., 1817; Scopoli, Entom. Carn., 931; Schrank, Enum. Ins. Austr., 447, 907.

Musca rosæ Degeer, Ins. vi, 6; pl. vi, figs. 14–21.

Syrphus pyrastri Fabricius, Spec. Ins. ii, 432, 58; Entom. Syst., iv, 305, 102; Meigen. Syst. Beschr., iii, 303, 44; Macquart, Hist. Nat. Dipt., i, 536, 3; Schiner, Verh. Z. B. Ges. vii, 338; Fauna Austr., i, 301.

Syrphus unicolor Curtis, Brit. Ent., 509, var.

Syrphus transfugus Fabricius, Entom. Syst., iv, 306, 104.

Scæva pyrastri Fabricius, Antl., 249, 3; Fallen, Syrph., 39, 5; Zetterstedt, Dipt. Scand., ii, 703, and viii, 3132.
Scæva transfuga Fabricius, Antl., 250, 5.
Scæva affinis Say, J. Acad. Phil., iii, 99, 9; Compl., ii, 81.
Syrphus affinis Wiedemann, Auss. Zw. Ins., ii, 117, 2.
Lasiophticus pyrastri Rondani, Ann. d. Acad. d. Aspir. Nat., iii.
Catabomba pyrastri Osten Sacken, Western Dipt., 325.

Habitat.—Kansas, Colorado, Wyoming, Washington Territory, Oregon, Utah, Arizona !, Scandinavia (Zett.), England (Walk.), Germany (Schiner), France, Algiers, Chili (Macq.), Italy (Rond.), Canary Islands (Webb and Berthelot).

♂, ♀. Length, 11 to 12mm. Face light yellow, somewhat bluish opalescent, often in dried specimens with a reddish tinge, a brown spot on the tubercle extending more broadly to the oral margin; pile abundant, whitish. Cheeks greenish black. Antennæ brownish black, often red on the under side of the first, second, and the third joint near the base; arista red. Front yellow, with a slender line reaching from the antennæ to the vertex or commissure, on each side of which the front is broadly subtranslucent olivaceous, the vertex black; pile black, in the male longer and more abundant. Eyes of male contiguous for about half as long a distance as the length of the frontal triangle; posterior orbits whitish pollinose, and with a fringe of white pile, longer below. Thorax shining greenish black, the humeri and post-alar callosities sometimes reddish; pile white, rather long and abundant. Scutellum yellow, very translucent bluish opalescent, the pile in large part blackish. Abdomen black, subopaque, with three pairs of arcuated whitish yellow spots, rather narrowly separated from each other, and more so from the lateral margins; the spots on the third and fourth segments are oblique, deeply concave in front, gently convex behind, inner ends rounded, approaching the front borders of the segments, the outer ends broader, truncate; fourth and fifth segments narrowly yellow behind; the first segment, the hind margins of the second, third, and fourth, dilated in the middle, and the remainder of the abdomen, more shining, somewhat metallic. Legs reddish yellow; basal half of front and middle femora and the hind femora, except the tip, black; all the tarsi brown, sometimes blackish, the metatarsi often reddish. Wings pure hyaline, the subcostal cell light yellowish, third vein with a long, moderately deep curvature.

Thirty specimens.

The facial stripe sometimes extends to above the middle of the face; the front of the female has sometimes a distinct brownish cast, and just above the antennæ not unfrequently brown.

EUPEODES.

Eupeodes Osten Sacken, West. Dipt., 328, 1877.

Very like species of Syrphus, but differs in the terminal abdominal segments. Head hemispherical; eyes bare, extending the whole vertical diameter, a little convergent below, without area of enlarged facets

in the male, contiguous in this sex. Front a little convex; frontal triangle large. Antennæ short, third joint large oval. Face slightly concave below the antennæ, obtusely tuberculate. Scutellum much raised, exposing the metanotum. Abdomen elliptical in the female, the fifth segment about half as long as the preceding;* in the male the sixth abdominal segment as long as the two preceding segments taken together, but narrower, convex, almost tubular when seen from above, unsymmetrical, the end pointing slightly to the right; the seventh segment bears the anal opening on the under side of the sixth; beyond the anus there are two long slender subparallel appendages, arcuate, bidenticulate at the end, nearly as long as the sixth segment, bent under the body when at rest, and embedded in a horny groove on the under side of the sixth segment, which encroaches on the fifth. Legs simple. Marginal cell of the wing open; small cross-vein near the base of discal cell, rectangular; third longitudinal vein gently curved. Type of genus, *E. volucris* O. S.

Eupeodes volucris. (Plate, III figs. 14, 14*a*.)

Eupeodes volucris Osten Sacken, West. Dipt., 329.
Syrphus perpallidus Bigot, Annales Soc. Ent. Fr., 1884, 90.

Habitat.—Washington Territory, California, Nevada, Utah, Kansas, Colorado, New Mexico, Arizona!

♂, ♀. Length, 7 to 10^{mm}. Eyes bare. Face whitish yellow, with black cheeks and a brown or black stripe over the facial tubercle. Frontal triangle whitish yellow with some black pile; front in female black, across the middle a faint subinterrupted arcuate band of whitish pollen leaving a triangular shining space below, lower part of the front yellow, except a dark brown crescent-shaped spot above the root of the antennæ. Antennæ brown or black. Thorax dark metallic green, sometimes slightly bluish, with very pale yellowish pile. Scutellum in male yellowish, more or less translucent metallescent, with pale yellow pile; scutellum in female distinctly yellow along the edge. Abdomen black, subopaque; the first segment, the lateral and posterior margins of all the segments, shining, the fifth wholly shining; on the second segment two yellow oblong spots, well separated from the lateral margin; on each of the two following segments a pair of longer, oblong yellow spots; those on segments three and four very slightly lunate; the posterior margins of the fourth and fifth segments narrowly yellow; sixth segment shining black, sparsely beset with whitish pile. Legs reddish; base of femora black, a little less extensive in the female; hind femora black, except the tip; hind tarsi more or less brown on the upper side. Wings hyaline; stigma yellowish brown.

Fifty specimens. The most common Syrphid on the plains in summer.

*The female of Syrphus diversipes has the fifth abdominal segment longer than in the other species of the genus.

SYRPHUS.

Syrphus Fabricius, Syst. Entom., 1775.
Scæva Fabricius, Syst. Antl., 1805.
Lasiophticus Rondani, Dipt. Ital., Prodr., i, 51, 1856.
Ancylosyrphus Bigot, Soc. Ent. Fr., 1882, Bull. bimens., No. 6, 78.
Ischyrosyrphus Bigot, Soc. Ent. Fr., 1882, Bull. bimens., No. 6, 78.

Medium to large-sized species, thinly pilose, black, or metallic green or blue, the abdomen with yellow bands or spots. Head hemispherical, as broad or a little broader than the thorax. Antennæ shorter than the head, the third joint oval, as long or scarcely longer than the first two together; arista basal, bare. Face perpendicular, produced but little below the eyes, broad, either wholly yellow or with a black median stripe, often with black cheeks, never* wholly black; tubercle obtuse, scarcely at all concave above it in profile, but below always receding. Eyes bare or pubescent, contiguous in the male. Thorax large, moderately convex above, never with distinct yellow lateral stripes. Scutellum more or less translucent, yellow, or yellowish and bluish or greenish. Abdomen oval, broader than the thorax, sometimes with nearly parallel sides and scarcely wider than the thorax, more than twice as long. Legs slender. Third longitudinal vein of the wing nearly straight or gently curved; anterior cross-vein near the base of discal cell; anterior outer angle of the first posterior cell always acute; marginal cell broadly open.

The present genus is one of the most difficult in the family to study. Many of the species are so closely allied that only a large amount of material will determine their limits. Thanks to the careful study which they have received in this country from Baron Osten Sacken, the labor has been much lessened. Still, much remains to be done by local students who shall make large collections and study them thoroughly while they are in a fresh or at least uninjured condition. All but two or three of the species of our fauna now known have been examined by me. Still, I have thought best to reproduce the larger part of Baron Osten Sacken's descriptions, with my own notes or additions appended.

TABLE OF SPECIES.

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Abdominal spots straight and transverse 7
4.—The abdominal spots do not come in contact with the lateral margin . . . 5
minal spots reach quite to the margin, or, if not, the spots are but little
s; emarginate in front, often broken up into smaller spots . . . 6

Syrphus simplex from the West Indies is an exception.

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9.—Abdominal spots of third and fourth segments distinctly arcuated . **arcuatus**
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The second and third bands reach the margin 18
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The second and third bands not quite reach the margin 23
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ribesii ♂
Second and third cross-bands not distinctly narrowed at their ends . . . 22
22.—Face and cheeks wholly yellow; abdominal bands broad . . **xanthostomus**
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24.—Face yellow; the second and third cross-bands distinctly reach the lateral margin **abbreviatus**

Face with a brown stripe; the second and third bands do not reach the lateral margin . . . . . **americanus**

For other species, see descriptions. See, also, Appendix.

Syrphus arcuatus.

Scæva arcuata Fallen, Dipt. Suec., 42, 11 (1816); Zetterstedt, Dipt. Scand., ii, 719, and viii, 3138, 22.

Syrphus arcuatus Meigen, Syst. Beschr., iii, 302, 43; Macquart, Hist. Nat. Dipt., i, 536, 6; Walker, Ins. Brit., i, 289, 8; Schiner, Verh. Z. B. Ges., vii, 344; id., Fauna Austr., i, 305.

Scæva lapponica Zetterstedt, Ins. Lapp., 598, 2 (1838).

Syrphus lapponicus Schiner, Ver. Z. B. Ges., vii, 344; Osten Sacken, Proc. Bost. Soc. N. H., xviii, 149; id., West. Dipt., 326; id., Cat. Dipt., 123.

Syrphus agnon Walker, List, etc., iii, 579.

Syrphus arcucinctus Walker, List, etc., iii, 580.

Syrphus Alcidice Walker, List., etc., iii, p. 579; Williston, Proc. Am. Phil. Soc., xx, 312 (*Didea*).

Syrphus arcuatus, var. *bipunctatus* Girschner, Wien. Ent. Zeit., iii, 197, pl. iii, fig. 1.

Habitat.—New England, Wyoming, California, Oregon, Washington Territory, Europe!, Nova Scotia, Hudson's Bay Territory (Walk.).

♂, ♀. Length, 9 to 12^{mm}. Face yellow or bluish-yellow; a median stripe not reaching the antennæ, shining black; cheeks more shining green. Antennæ dark brown, along the underside more or less reddish. Frontal triangle nearly like the face, but with yellowish dust; pile black; a slender black arch above the base of antennæ (sometimes dissolved into two spots), bent downward in its middle portion, and immediately below the color is brighter yellow; front in female black, with black pile, shining, except along the sides, where it is thickly yellowish pollinose, to above the middle, in which place the pollen is narrowly separated. Eyes bare. Thorax deep shining greenish or bluish black, with rather abundant light-colored pile. Scutellum yellowish translucent, with a bluish opalescent reflection, the pile chiefly black. Abdomen black, mostly shining, with three pairs of bright yellow spots, all narrowly separated from the lateral margins; the first pair a little more broadly separated than the others, straight, transverse, elongate oval; second and third pairs a little oblique, concave in front, convex behind, the inner ends rounded, the outer ends acute, directed forwards; fourth segment with a narrow yellow hind margin; fifth with the anterior angles, and the hind border also, yellow. Legs yellowish red; base of front and middle femora, and the hind femora except the tip, black; a ring, or the larger part, of the hind tibiæ, and terminal joints (or, except the base) of all the tarsi brownish. Wings nearly hyaline, subcostal cell brownish, stigma darker.

Variety *arcuatus*. Third longitudinal vein nearly straight, or only

gently curved. Four specimens, Connecticut, New Hampshire, Wyoming.

Variety *lapponicus*. Third longitudinal vein deeply curved, the submarginal cell hence much broader in the middle part than beyond. Fifteen specimens, Connecticut, New Hampshire, California, Oregon, Colorado, Virginia.

Variety *lapponicus*, subvar. *bipunctatus* Girschner. This form occurs in America (= *Syrphus Alcidice* Walker). May it not be due to the effects of drying?

The differences, other than in the third vein, are inconstant, and seem to occur equally among specimens from all parts of the country. That this difference alone is a sufficient specific character is to me doubtful; hence I have here considered it a secondary or varietal character, and have for that reason chosen the older name for the species. Schiner considered *S. lapponicus* a synonym of *S. arcuatus*. Of the identity of our species with the European there can be no doubt; specimens sent by Baron Osten Sacken were compared by Dr. Loew.

From the female of *Eupeodes volucris*, which may be easily confounded with *lapponicus*, the difference in the length of the fifth abdominal segment will at once distinguish it.

"*Syrphus arcucinctus* Walker, List, etc. (Hudson's Bay Territory), is represented in the British Museum by two specimens, one of which is my *S. amalopis;* the other belongs to the group of *S. lapponicus*. The description is drawn from the latter specimen, the abdominal spots of *S. amalopis* being much more than 'slightly curved.'"—O. S., Cat. Dipt., 245.

Syrphus amalopis.

Syrphus amalopis Osten Sacken, Proc. Boston Soc. Nat. Hist., xviii, 148, 1875.

Habitat.—White Mountains, New Hampshire (O. S.), Connecticut, New Mexico!

"♂, ♀. 10 to 11^{mm}. "Male. Eyes pubescent; face of a dingy brownish yellow, with a broad brown stripe in the middle (its breadth is equal to half of its length or more); cheeks black, with a greenish reflection; a black, broad, oral border; antennæ black, front and vertex likewise; facial tubercle salient. Thorax dark metallic green, clothed with black pile, mixed with fulvous on the sides and near the scutellum; the latter dull yellowish brown, with metallic reflections, beset with black pile, and with a blackish border and corners. Abdomen black, very little shining; on the second segment two oblong yellow spots; on the third and fourth segments a pair of lunate spots, club-shaped on the inner end, truncate on the outer, and considerably excised in the middle; the fourth and fifth segments with a narrow, yellow, posterior margin; all the yellow parts are straw colored. Legs black, tip of femora and base of tibiæ yellowish brown, the extent of this brown being much less on the hind pair. Wings distinctly infuscated.

Female. Front and vertex metallic greenish black; spots on second segment coarctate in the middle, those on segments three and four dissolved in two, so that these two segments show each a transverse row of yellow spots, nearly of the same size and equidistant; the fifth segment has two spots at the base; the wings are hyaline. In all other respects like the male.

Two males and one female.

I have not the slightest doubt that these males and females belong together; the difference in the coloring of the wings has no importance; as to that in the coloring of the abdomen, I should not wonder if this species proved to be very variable in this respect, and if intermediate stages occurred between that where the lunate spots are entire and where they are dissolved in two. The abdomen in this species is more convex broader and somewhat shorter than that of *S. lapponicus*.

In the specimens described above, the yellow abdominal markings do not come in contact with the lateral margin. But I have a pair of specimens (♂, ♀) from the same locality in which this contact occurs. In the female the spots are also cut in two as they are in the typical specimens."—Osten Sacken, l. c.

I have three female specimens from Connecticut (June 11), on blossoms of *Prunus virginianus*, that seem to be intermediate between this species and the next, *S. intrudens*, but agreeing rather better with the description of *S. intrudens*. The facial stripe is black, narrower than the yellow portion on the sides. The antennæ are wholly reddish yellow; in one specimen only, the third joint is brown; the front has a white pollinose interrupted cross-band; the pile of the scutellum is partly or wholly yellowish. The abdomen is very shining, all the spots attain the lateral margin, those of the third and fourth segments are, in one specimen, only deeply excised, in the other two specimens dissolved into two spots; the spots on the second segment are broadly oval and not at all excised in front. The legs are light yellow; the front and middle femora at the base, and the hind femora on the basal half, are black; the hind tibiæ with a brownish ring, and the hind tarsi in one specimen brownish. A single female from New Mexico (G. F. Gaumer) seems to agree perfectly with the description. The spots on the first segment are excised in front, and those on the third and fourth segments are not cut in two and reach the lateral margin distinctly. The species, as Osten Sacken says, is evidently a variable one, and I am inclined to doubt the validity of *S. intrudens*.

Syrphus intrudens.

Syrphus intrudens Osten Sacken, West. Dipt., 336, 1877.

Habitat.—California (O. S.).

"Length about 10mm. Male. Eyes pubescent; face brownish yellow, with a broad black stripe in the middle, abbreviated before the antennæ, and narrower than the yellow portion of the face on each side of it; the black is prolonged [illegible] black cheeks, which

have a slight greenish reflection; antennæ black, third joint sometimes slightly reddish at the base; front and vertex black, with a greenish reflection and black pile; occiput beset with a fringe of fulvous pile. Thorax dark metallic green, clothed with fulvous pile, especially conspicuous on the pleuræ; scutellum with a shade of dull yellowish under the strong greenish metallic luster; its pile is black; a few fulvous hairs on the sides only. Abdomen black, very little shining; on the second segment two oblong yellow spots, not reaching the lateral margin; on the third and fourth segments a pair of deeply lunate spots, club shaped at both ends, touching the anterior margin on one side, broadly contiguous to the lateral margin on the other; the deep excision on them has a triangular shape; fourth and fifth segments with a narrow yellow posterior margin. Halteres with a lemon yellow knob. Legs reddish; anterior femora black on their proximal half; hind femora black, except the tip; hind tibiæ with a brown ring in the middle, the other tibiæ also slightly marked with brown; tarsi brownish above. Wings distinctly tinged with brownish; stigma brownish.

Three males, April 15–20.

Very like *Syrphus amalopis* O. S., from the White Mountains, New Hampshire, but the pile on the occiput is bright fulvous, not pale yellowish white; there is more fulvous pile on the thorax; the abdominal spots are a little larger, their inner club-shaped end more clumsy, the emargination deeper; the legs are less dark colored; the facial tubercle less prominent. Nevertheless, the resemblance is very striking. *S. amalopis* seems to be a very variable species. The same variations may occur in *S. intrudens*."—Osten Sacken, l. c.

Syrphus contumax.

Syrphus contumax Osten Sacken, Proc. Bost. Soc. Nat. Hist., xviii, 148, 1875.
Syrphus adolescens Walker, List, etc., iii, 584.

Habitat.—White Mountains, New Hampshire!

"♂, ♀. Length about 9.5^{mm}. Eyes distinctly pubescent. Face with a bluish reflection, sometimes almost concealing the dull brownish yellow ground color. Cheeks and oral border broadly black; front very broad in the female, black, clothed with grayish pollen; in the male with a bluish reflection. Vertex greenish black, metallic. Antennæ black, inserted on brownish yellow ground. Thorax greenish bronze color, with indistinct longitudinal stripes of an opaque brownish; dorsum beset with brownish; pleuræ with brownish fulvous erect pile; scutellum dull yellowish, with a bluish reflection. Abdomen black, very hairy, with three pairs of oblong, transverse, straight, brownish yellow spots, which as a rule do not reach the margin, but sometimes emit an indistinct prolongation anteriorly which touches it; the last two segments are bordered with yellow; the pile on the abdomen, yellow and black, is, especially in the male, long, erect, and rather conspicuous. Femora (of the male) black on their proximal half, often beyond, hind

femora up to four-fifths of their length; tibiæ brownish yellow; tarsi black. In the female the femora are black at their bases only; wings hyaline, sometimes tinged with brownish; stigma brownish, third longitudinal vein nearly straight.

Three males and two females from Mount Washington.

The facial tubercle in this species is very salient, the whole lower part of the face somewhat projecting, the front of the female comparatively broad, the first joint of the hind tarsi of the male distinctly swollen. The general appearance of this species is different from an ordinary Syrphus."—Osten Sacken.

"*Syrphus adolescens* is represented in the British Museum by three specimens; one belongs to the group of *S. lapponicus*, the other (from Nova Scotia) is *S. americanus*, the third is my *S. contumax*. The description was probably drawn from the latter, though it is very unmeaning."—O. S., Cat. Dipt., 245.

Syrphus mentalis, n. sp.

Habitat.—Washington Territory!

♀. Length, 9mm. Eyes pubescent. Front shining black, extending down on the sides as far as the insertion of the antennæ, but the latter inserted on yellow ground; across the middle of the front with a rather narrow, interrupted, yellowish pollinose band; pile black. Antennæ brownish black. Face yellow, the cheeks in front, and thence to the middle, along the oral margin, and a moderately broad facial stripe, reaching acutely to the base of the antennæ, black. Cheeks behind, and across behind the mouth, yellow. Thorax shining greenish black, on the pleuræ with whitish pile. Scutellum dark, subtranslucent, only a little yellowish, with black pile. Abdomen broader than the thorax, shining, with three pairs of slender spots; first pair more broadly separated, their outer end attenuated, curving forward to meet the lateral margin; second and third pairs scarcely a fourth the width of the segments, interrupted by about their own width, reaching nearly or quite to the lateral margin; fifth and sixth segments wholly black. Legs dark yellowish red; base of all the femora (on the hind pair including the larger part), and the hind tarsi, black; the hind tibiæ except the base, and the front and middle tarsi, brown. Wings lightly tinged with brown; the stigma brown.

One specimen; an additional one in the Museum of Comparative Zoology at Cambridge.

The front in this species is rather broad above, and the abdominal spots are unusually narrow.

Syrphus disjectus.

Syrphus disjunctus Williston (non Macquart), Proc. Am. Phil. Soc., xx, 314 (1882).

Habitat.—Washington Territory!

♂. Length, 9 to 12mm. Eyes bare. Frontal triangle shini
greenish black, narrowly yellow al

vertex also, black. Antennæ brownish black, the first two joints and the base of the third below, reddish. Face yellow, with a bluish reflection, on the sides thinly whitish pilose, no dark spot nor stripe on the tubercle; cheeks below the eyes, in front, black, behind and across the posterior oral margin, yellow. Thorax brownish greenish black, shining, the pile, especially on the sides and on the pleuræ, orange colored. Scutellum only a little yellowish, more bluish opalescent, black at the base and corners; pile in large part black. Abdomen black, but little shining, except on the first segment, the narrow margin of the second and third segments, and the fourth and fifth wholly; with three pairs of bright yellow spots, all very distinctly separated from the lateral margins; the first pair small, oval, broadly separated from each other, near the middle of the segment; second pair large, nearly square, with rounded angles, more than half as wide as the segment, not reaching the front margin, separated by scarcely half their width; the third pair a little smaller, somewhat oblique, and sometimes touching the front margin; fifth segment yellow, with a large triangular black spot. Legs reddish yellow; coxæ, except the trochanters, front and middle femora, hind femora, except narrowly at the base and the outer third or fourth, hind tibiæ, except the base and tip, and the hind tarsi, brown or black. Wings tinged with brownish, the stigma brown.

Four specimens.

The large spots on the third and fourth segments, which are very distinctly separated from each other and the lateral margins, together with the bare eyes, will distinguish this species from any described from North America. A single female from the Boston Society of Natural History (S. Henshaw) is closely allied to this, possibly it is the same. It differs, however, in the spots of the second segment being larger, narrowly separated, those of the third and fourth segments longer transversely and not so wide, and more narrowly separated; the abdomen, except the second segment, is more shining, the dorsum of the thorax more shining greenish, and on the sides thickly yellowish pollinose; the sides of the front are yellow on the lower part. It is probably another species, but more specimens are needed to settle the question.

Syrphus velutinus.

Syrphus velutinus Williston, Proc. Am. Phil. Soc., xx, 314, 1882.
Ischyrosyrphus tricolor Bigot, Annales Soc. Ent. de France, 1884, 73.

Habitat.—Mount Hood, Oregon!, California (Bigot).

♂, ♀. Length, 11 to 12mm. Eyes very distinctly pilose in both sexes. Front shining green-black with black pile. Antennæ black or brownish black. The yellow of the face is obscured somewhat by a metallic bluish reflection, a rather broad black shining stripe in the middle, extending along the oral border to the cheeks, which, with the lower part of the posterior orbits, are greenish black. Dorsum of thorax black, slightly greenish, only a little shining, pile abundant, rather long, light

orange colored, or light yellowish, except across the disk, where it is blackish. Scutellum obscure yellowish, translucent, the sides and base broadly bluish black. Abdomen elongate, scarcely broader than the thorax, the sides nearly parallel to the end of the third segment; opaque black; first segment, the hind border of the fourth segment, dilated in the middle, and the fifth segment wholly, shining greenish metallic: second segment with large spots; in the male rounded on the inner ends, and only touching the front border on the outer part, somewhat attenuated before reaching the lateral margin; in the female longer, nearly square, attaining the front border for nearly their whole length; third and fourth segments before their middle with a straight, narrow crossband, interrupted in the middle for about their own width. Legs black, terminal half of front and middle femora, front and middle tibiæ, except brownish rings beyond the middle, yellow. Wings hyaline, stigma brown.

Syrphus pauxillus, n. sp.

Habitat.—New Mexico!

♀. Length, 7mm. Eyes pilose. Face yellow, a broad median stripe, not reaching the antennæ, and cheeks, shining black; in profile the face is projecting, the distance from antennæ to tip of tubercle distinctly greater than from the antennæ to ocelli. Antennæ black; the third joint brown, on the under side near the base reddish. Dorsum of thorax shining bluish-black, with light yellowish pile. Scutellum only faintly yellowish. Abdomen broadly oval, shining black, with three pairs of yellow spots, which are narrow and rather narrowly separated, all of them narrowly, but distinctly separated from the lateral margin; first pair straight, transverse; the second and third pairs oblique, arcuate, their anterior end nearly touching the front margin the posterior end near the middle of the segment; the spots are concave in front and convex behind, of nearly equal width: fourth segment with a narrow hind margin: fifth segment with a small spot on the front angles, and a narrow margin behind, yellow. Legs yellow, femora black at the base (the hind legs wanting). Wings hyaline, stigma brownish.

One specimen (G. F. Gaumer).

Syrphus sedalis, n. sp.

Habitat.—Colorado!

♀. Length, 10mm. Eyes pilose. Face yellow, lightly pollinose on the sides, a small brownish spot on the tubercle: oral margin and the cheeks metallic black. Antennæ black, third joint reddish below near the base. Front black, broadly grayish pollinose across the middle, leaving the vertex and a small spot below more metallic black: a slender arch, immediately above the antennæ, yellow: pile of front black. Lateral posterior orbits thickly grayish pollinose. Dorsum of thorax deep shining green, with light yellow pile. Scutellum light yellowish, subtranslucent. Abdomen broadly oval, shining black: the crossbands yellow, interrupted. The first pair of spots is more broadly sep-

arated, and have a slender anterior prolongation that reaches quite to the lateral margin; the second and third pairs are less widely separated and the outer ends are distinctly cut off from the lateral margins; the spots are on the front part of the segments, moderately broad, their inner ends nearly touching the front margin of the segments; they are very slightly oblique in position, gently concave in front and convex behind, their outer posterior parts rounded; fifth segment with a narrow hind margin narrowly interrupted, and coalescent on the sides with the yellow of the next segment in front; the fifth segment also with a slender yellow hind border. Legs black; distal half of front and middle femora, tip of hind femora, broad base of all the tibiæ and tips of four front tibiæ, yellow. Wings hyaline; stigma light yellow.

One specimen (H. K. Morrison).

Syrphus lotus, n. sp.

Habitat.—Arizona!

♀. Length, 10^{mm}. Eyes pilose. Face and cheeks yellow, the former, in the single specimen, of a strong green tint; a facial stripe, not reaching the antennæ, brown. Front black, grayish-yellowish dusted across the middle, leaving a large oval spot below, and the vertex, black. Antennæ brown, the third joint below near the base reddish. Pile of front wholly black, of the occiput light yellow. Dorsum of thorax deep green, in front with two grayish pollinose stripes. Scutellum subtranslucent obscure yellow, the pile chiefly black. Abdomen but little shining, black; the bands all distinctly separated by a black interval from the lateral margins; first cross-band interrupted by a small interval; second and third bands bilaterally oblique, cut off squarely at the ends, and touching the front border for a considerable distance in the middle; on each side in front a little concave, on the sides behind nearly straight, or gently convex, the two sides forming a very shallow inverted V; posterior margin of the fourth segment, a spot on the anterior angle of the fifth, and a slender hind margin, yellow. Legs yellow, base of all the femora black. Wings hyaline, stigma brownish.

One specimen, Arizona (H. K. Morrison).

Another female specimen from New Mexico (Geo. F. Gaumer) is perhaps allied to this. The facial stripe is black, and there is a black stripe on the cheeks; the second and third abdominal cross-bands are more oblique, and strongly concave in front, and the second is narrowly interrupted in the middle; they are both more convex behind, and the form more deeply V-shaped. The hind femora are black on nearly their whole length; the hind tibiæ have a black ring, and the hind tarsi, except the base, are also black. From *amalopsis*, with which it may be confounded when the spots are separated, it seems to be distinct in its larger size, more oblique spots (all of which are distinctly separated from the lateral margins), lighter-colored scutellum, etc.

Syrphus diversipes.

Syrphus diversipes Macquart, Dipt. Exot., 4e Suppl., 155, 54; Osten Sacken, Proc. Bost. Soc. Nat. Hist., xviii, 149, 1875.

† *Syrphus cinctellus* Zetterstedt, Dipt. Scand., ii, 742, 45.

Habitat.—White Mountains, New Hampshire, New York, Washington Territory!, Lake Superior (O. S.), New Foundland (Macq.).

♂, ♀. Length, 9mm. "Abdomen narrow, with nearly parallel sides; first segment (♂) greenish black, with more or less yellow anteriorly, or on the sides; in the female the yellow prevails, leaving only a metallic green spot on each side, which often is subobsolete; the following four segments have each a yellow cross-band on their anterior half; the first cross-band is broadly interrupted; in the male the interruption takes the shape of an inverted black triangle, expanding anteriorly so as to occupy nearly the whole anterior margin of the segment; in the female this triangle is narrow, and occupies but a small portion of the anterior margin; thus in the female the yellow of the cross-band coalesces with that upon the first segment; the following cross-bands are entire, the second and third nearly of the same breadth and not attenuated on the sides; the fourth band in the male occupies nearly the whole segment, except a black semicircle posteriorly; in the female it occupies the anterior half of the segment, and is gently arched, and distinctly notched posteriorly. Face yellowish, with a bluish reflection, sometimes brownish in the middle; above the antennæ a conspicuous black spot is surrounded by the yellowish pollen, which covers the rest of the front; antennæ reddish, upper half of the third joint, as well as of the preceding ones brown. Eyes bare. Thorax metallic green; scutellum yellowish, with a metallic green reflection; humeri and a part of the pleuræ clothed with yellowish pollen. Legs yellow; outer half of the hind femora, sometimes nearly the whole hind femora, except the base), hind tibiæ and tarsi brown; knees yellowish. Wings with a brownish shade on the apex, usually distinct in the female, often nearly obsolete in the male.

Ten male and thirty female specimens. Two male specimens have the four anterior femora distinctly infuscated at the base.

S. cinctellus Zetterstedt, is very like this species and probably identical with it. His description agrees with the North American specimens. A European specimen in the Museum of Comparative Zoology, named by Dr. Loew, does not show any [illegible] with nothing."—(Osten Sacken, l. c.

Two male and [illegible] specimens from the White Mountains, New Hampshire, [illegible] with this description; [illegible] and sec- [illegible] Wash- [illegible] specimens have a [illegible] by Baron Osten Sacken, wherein they differ

from all the North American Syrphus known to me, viz, the fifth abdominal segment is unusually long, more than half as long as the preceding, agreeing in this respect with *Eupeodes*.

Syrphus protritus.

Syrphus protritus Osten Sacken, West. Dipt., 328.

Habitat.—California (O. S.)

"♂. Length, 10 to 12^{mm}. Eyes glabrous. Face yellow, with a bluish opalescence; on the cheeks a large blackish spot below the eye, and not quite reaching the oral margin (it is variable in size, sometimes very small); the lower edge of the head behind the mouth and between the lower ends of the eyes is again yellow. Antennæ red, sometimes faintly brown on the upper side of the third joint; front brownish yellow above the antennæ, black, slightly pruinose, and with black pile in the corner, between the eyes; vertex black, with black pile; occiput grayish, beset with pale hairs. Thorax dark bronze green, beset with dense yellowish pile. Scutellum yellowish, with black pile, some yellowish hairs on each side. Abdomen black, opaque, with three reddish yellow cross-bands, the first of which is broadly interrupted; the two yellow spots thus formed are prolonged along the lateral margin to the very base of the abdomen; the second and third bands reach the lateral margin, being only a little attenuated before it; they are biconvex posteriorly, with an angular emargination in the middle; fourth segment with a yellow border posteriorly; the fifth red, with a black triangle in the middle. Legs altogether reddish, often a brown shade in the middle of the hind tibiæ and on the hind tarsi, femora red from the very base; coxæ and trochanters black. Wings subhyaline; their root tinged with brownish, the costal cell with yellowish; stigma brownish yellow, third vein nearly straight.

Four males. Is very like the common *S. ribesii* of the Atlantic States; only in that species the male has black hind femora, the black spot on the cheeks is smaller, and the antennæ are much darker."—Osten Sacken, l. c.

Syrphus ribesii.

Musca ribesii Linnè, Fauna Suec., 1816 (1781); Schrank, Enum. Insect. Austr., 905.

Syrphus ribesii Latreille, Gen. Crust., iv, 325; Fabricius, Spec. Insect., ii, 432, 57; Entom. Syst., iv, 304, 100; Meigen, Syst. Beschr., iii, 306, 49; Walker, Ins. Brit., i, 287, 4; Osten Sacken, Cat. Dipt., 123; Schiner, Verh. Z. B. Ges., vii, 340; Fauna Austr., i, 310.

Scæva ribesii Fabricius, Antl., 248, 1; Fallen, Syrph., 40, 6; Zetterstedt, Dipt. Scand., ii, 707; ibid., viii, 3132.

Syrphus rectus Osten Sacken (non Novicki), Proc. Bost. Soc. Nat. Hist., xviii., 140.

† *Syrphus philadelphicus* Macquart, Dipt. Exot., ii, 2, 93, 11; tab., xvi, fig. 2.

Habitat.—Europe, Atlantic, Middle, and Pacific States!

♀, ♂. Length, 7 to 12^{mm}. "♀. Eyes glabrous; hind femora yellow, often with a brown ring before the tip.

♂. Eyes glabrous; hind femora black, except the tip.

Female. Very like the female of *S. torvus;* the differences, as given above, consist in the entirely glabrous eyes and the femora, which are yellow from the very base (coxæ black); in most specimens the hind femora have a brown ring before the tip.

The size, as well as the shape, of the abdominal stripes are very variable (the female of *S. torvus* shows, in both respects, much less variation). Between the following two extremes all intermediate stages occur.

(1) The smallest specimens, from 7^{mm} upwards in length, have the yellow stripes on the third and fourth segments quite straight, not attenuated before coming in contact with the lateral margin; their hind borders show no perceptible convexity or concavity; such specimens usually have a distinct brown ring on the hind femora, a little before the tip.

(2) Larger specimens, up to 11 to 12^{mm} long, have the stripes on the third and fourth segments, with a distinctly biconvex hind margin, with a sinus in the middle; these stripes are distinctly attenuated on each side, before reaching the lateral margin. Such large specimens often have no brown ring on the hind femora.

Male. Differs from the female in the femora being black at base; the four anterior ones for about one-third of their length; the hind ones altogether black or brown, except at the tip. The majority of the specimens before me are of medium size (about 8 to 10^{mm}), but some larger ones also occur. The shape of the yellow bands does not vary as much as in the female; they are always attenuated at both ends and biconvex posteriorly, with a sinus in the middle. The altogether glabrous eyes easily distinguish *S. ribesii* ♂, from *S. torvus* ♂; in other respects they look very much alike. The average size of *S. ribesii* ♂, is a little smaller.

Minor differences between *S. torvus* and *S. ribesii*, available for both sexes, are:

(1) The face under the eyes is altogether yellow here; there is no grayish spot, as is always visible in *S. torvus.*

(2) The sides of the face in *S. torvus* are beset with very distinct blackish pile; in *S. ribesii* this pile is of a pale color, and almost imperceptible; hence the face looks smoother.

(3) The antennæ are less dark, more reddish in *S. ribesii.*

(4) The scutellum is of a slightly purer yellow.

(5) The four anterior tibiæ are less brown, more reddish, especially on the first joint.

(6) The contact of the abdominal yellow spots and bands with the lateral margins is slightly broader in *S. ribesii;* hence the yellow prolongation or neck of the spots on the second segment is broader, and, consequently, seems to be shorter.

(7) The stigma of the wings is much paler, yellow rather than brown.

(8) The metallic green thorax is somewhat more shining, less dull than in *S. torvus;* in many specimens, however, this difference is scarcely perceptible."—Osten Sacken, l. c.

In comparison of a large number of specimens from the East there is little additional worthy of note, except that rarely the tubercle of the face is distinctly brown. From Washington Territory and California I have eight females that do not differ in anything that I can see from the Eastern specimens. The black of the front extends down nearly to the antennæ, the femora are wholly yellow, and the abdominal cross-bands reach quite to the lateral margins of the abdomen, though narrowly so as in our Eastern forms. From *S. opinator*, which is very close, the latter character, and the lower part of the front above the antennæ not being yellow, are the chief differences. It is very possible that these females may belong with the males described by Baron Osten Sacken as *S. protritus*, which differ chiefly from the males of *S. ribesii* in the femora not being black. From Montana and Arizona I have examined a number of specimens, both male and female, which undoubtedly belong to *S. ribesii*. A single small male specimen from Northern California has the cheeks and a broad facial stripe black; the yellow on the sides is also obscure. It may indicate a distinct species.

Syrphus torvus.

Scæva topiaria Zetterstedt (non Meigen), Dipt. Lapp., 599; id., Dipt. Scand., ii, 723; ibid., viii, 3139, 26.

Syrphus topiarius Walker, List, etc., iii, 582; Schiner, Verh. Zool. Bot. Ges., vii, 347; Fauna Austr., i, 304; Staeger, Bonsdorf, Malm, etc.

Syrphus torvus Osten Sacken, Proc. Bost. Soc. N. H., xviii, 139 (1875).

Habitat.—Atlantic States, Washington Territory!, Greenland (Staeger), Europe, Siberia (auct.).

♂, ♀. Length, 10 to 12.5mm. "Female. Face and cheeks yellow, with a very slight bluish reflection; a faint grayish spot on the cheeks, under the eyes; oral border; in the middle of the notch, usually slightly brown. Front and vertex greenish black; the former, on both sides along the eyes, with a broad border of yellowish pollen, almost meeting the similar border of the opposite side. Eyes pubescent (in many specimens the pubescence is very much rubbed off and very difficult to perceive). Antennæ inserted on brownish-yellow ground; the dark color of the front begins immediately above their root, forming a blackish-brown arch with a projecting angle in the middle. Antennæ dark brown; third antennal joint more or less reddish below, sometimes altogether dark brown. Thorax greenish, with but little luster; in well-preserved specimens a faint tinge of a geminate, grayish, middle stripe is perceptible anteriorly; scutellum dull yellowish, with a slight bluish reflection and black pile. Yellow spots on the second abdominal segment elliptical, prolonged usually as a narrow neck, which reaches forward and touches the margin; the yellow cross-bands on the third and fourth segments have a very gently biconvex hind margin, with a very shallow, often indistinct, sinus in its middle; on each side the cross-bands are attenuated and curved forward, so as to reach the anterior margin of

the segment; the black interval between the stripes is twice as broad as the stripes. Fourth and fifth segments with yellow posterior margins, the fifth usually with two yellow spots on each side, at the base. Coxæ and basal third of femora black; on the hind pair the black reaches beyond the middle of the femora; hind tibiæ often with a brownish ring; four anterior tarsi brown, the root of the first joint often reddish; hind tarsi dark brown. Root of the wings, as far as the humeral cross-vein, slightly brownish, or yellowish; costal cell almost hyaline; stigma brown.

"Male. Similar to the female, but abdominal cross-bands broader, the biconvexity on their hind side stronger, and the sinus in the middle deeper; the gray spot on the cheeks, under the eye, often larger, sometimes occupying a considerable portion of the cheek; the brown ring on the hind tibiæ usually expanded, so as to reach the tip of the tibiæ. The eyes are more distinctly pubescent; the front is beset with yellow pollen, except a narrow black space above the antennæ.

"In drawing up the description, I had a large number of specimens before me. Among them was a lot of twenty-three males and thirty-five females, caught by Mr. B. P. Mann, on the 7th of July, 1874, almost on the same spot, in the subalpine regions of Mount Washington. Another lot of twenty-seven males and twenty females was collected by Mr. Morrison, also in the White Mountains. Other specimens were from Massachusetts, Rhode Island, Canada, the Rocky Mountains in Colorado, etc."—Osten Sacken, l. c.

From an examination of a large series of this species collected in the White Mountains in company with numerous individuals of *S. ribesii* (July 25–30), with others from various localities in the East, the Middle States, Washington Territory, etc., I find nothing worthy of addition to the above full description.

Syrphus Lesueurii. (Plate IV, fig. 2.)

Syrphus Lesueurii Macquart, Dipt. Exot., ii, 2, 92 (female); Osten Sacken, Proc. Bost. Soc. Nat. Hist., xviii, 143.

Epistrophe conjungens Walker, Dipt. Saunders., 242; tab. vi, fig. 5 (male).

Habitat.—New England, Washington Territory!

"♂, ♀. Length, 12 to 13mm. Larger than *S. torvus* and with a much narrower abdomen; in the female the abdomen is a little broader, still less broad than in the allied species. The yellow face has a brown, abbreviated stripe in the middle (sometimes wanting); the antennæ are uniformly black. Eyes bare. The yellow spots and cross-bands on the abdomen are straight, and reach the sides of the abdomen with their full width; the yellow has a bluish reflection (seldom indistinct); in the male the band on the third segment has a sharp triangular notch in the middle of the hind margin, which does not exist in the female; fourth and fifth segments often have a greenish reflection, and are margined with yellow posteriorly. The femora are black at the base, the hind tibiæ have a distinct brown ring. The wings usually have a distinct yellowish tinge.

Some rare specimens of both sexes are only 8^{mm} long.

I compared about ninety male and female specimens, principally from the White Mountains; also from Maine, Massachusetts, New York, etc."—Osten Sacken, l. c.

Baron Osten Sacken could see no difference between *S. lesueurii* and a specimen from Europe labeled "Silesia," which he compared.

Two female specimens from Washington Territory agree in every respect with numerous specimens which I have from Mount Washington. In one the abdominal cross-bands are strongly bluish.

Syrphus abbreviatus.

Scæva abbreviata Zetterstedt, Dipt. Scand., viii, 3136, 13 (female).
Syrphus excisus Schiner, Fauna Austr., i, 311 (in part).
Syrphus abbreviatus Osten Sacken, Proc. Bost. Soc. Nat. Hist., xviii, 144.

Habitat.—Connecticut, Massachusetts!, Europe.

"♂, ♀. Length, about 8^{mm}. Male. Face yellow; cheeks black, which color coalesces with the brown oral borders, and is connected under the oral opening with the black on the opposite side; in some specimens the facial tubercle is also brownish; third antennal joint brownish, more or less reddish on the under side, sometimes altogether reddish; front yellow; no brown spot above the antennæ; vertex blackish-bronze color. Eyes bare. Thoracic dorsum rather bright brassy-green. Yellow spots on second abdominal segment rather large, obliquely triangular, touching the margin with the apex only; the interval between them moderately broad, equal to about one-third or one-fourth of the breadth of the spot; yellow bands on segments three and four rather broad, much broader than the black band between them; the posterior margin in both is sinuate in the middle, more markedly in the band of the third than of the following segments; the bands do not reach the abdominal margin, and are cut off obliquely on the sides; the distance of their anterior corner from the magin is very small, however; fourth segment with a narrow yellow border posteriorly; fifth segment yellow with a small transverse black spot in the middle, near the base. Legs yellow, but base of all the femora black; on the hind femora the black occupies one-third or one-half the femur.

Female. Resembles the male, but with the following differences: lower part of the front above the antennæ, yellow; upper part and vertex brownish green; oral border less infuscated, the infuscation being usually distinct in the middle of the excision only; the yellow spots on the second abdominal segment are larger, the interval between them narrower, often linear, sometimes obsolete; the bands on the third and fourth segments are comparatively narrower than in the male; and but little broader than the interval between them; their hind margins are gently concave-sinuate in the middle, and convex-sinuate each side; both bands distinctly reach the abdominal margin; fifth segment yellow, with a triangular black spot in the middle; coxæ black, but femora altogether yellow (the four anterior femora in some specimens are black

at the extreme base only); the hind femora are altogether yellow, thus differing widely from those of the male.

Three male and six female specimens, all from Massachusetts.

A pair (♂, ♀) of European specimens obtained from Dr. Schiner are exactly similar to the American specimens; they also show all the sexual differences, as explained above. Zetterstedt's description agrees very well with my female specimens. In my report on the Diptera of Colorado Territory (U. S. Geol. and Geogr. Surv., etc., by F. V. Hayden, for 1873, p. 564), I mentioned *S. corollæ* as occurring there. I was mistaken in this determination; the specimen is more like *S. abbreviatus*, although I would not without further proof identify it even with this species."—Osten Sacken, l. c.

Four male specimens from Connecticut and Massachusetts agree throughout with the above full description; the second abdominal band in one does, however, distinctly attain the lateral margin of the segment in front. I have a male and a female specimen of *S. corollæ*, received from Mr. F. M. v. d. Wulp, the male of which does not show any difference that I can see from my specimens of *S. abbreviatus*.

Syrphus Americanus.

Syrphus Americanus Wiedemann, Auss. Zw. Ins., ii, 129, 22; Osten Sacken, Proc. Bost. Soc. Nat. Hist., xviii, 145.

Habitat.—New England, Montana!, British Possessions, New York, Delaware, Virginia, Michigan, Texas.

♂, ♀. Length, 9 to 10^{mm}. "Female. Face yellow, often brownish, *with a brown* stripe in the middle, which begins at the oral margin, but does not reach the antennæ; the latter brown, reddish on the underside of the third joint. Cheeks blackish; *but separated from the mouth by a narrow yellow border*, which, on the underside of the mouth completely cuts off the connection between the black color on both sides. Front brownish bronze color, powdered with yellow on each side; the lower part of the front is more or less yellow, but immediately above each antenna there is a brownish spot, which sometimes coalesces with the bronze color of the upper front; vertex bronze color. Eyes bare. The first abdominal cross-band is not interrupted, but coarctate in the middle; its ends do not touch the margin of the abdomen, but are separated from it by a narrow black border; (sometimes a brownish mark in the middle of this band gives it the appearance of being subinterrupted). The second cross-band is nearly as broad as the black cross band between it and the next yellow band; it is usually perfectly straight (in some specimens the hind margin is gently sinuate); its ends do not touch the lateral margin of the abdomen; they are cut obliquely, forming a sharp angle anteriorly, and a rounded one posteriorly; the former almost touches the margin of the abdomen. The third band is similar to the second, only its hind margin is more perceptibly arcuated. The posterior margin of the fourth segment has, as usual, a narrow yellow border; the fifth likewise, and two yellow spots at the base besides.

Femora yellow; the four anterior ones in some specimens brownish at the extreme base only; the hind pair with a more or less distinct brown ring on the distal half; four anterior tibiæ and tarsi yellow; the hind tibiæ sometimes with a brownish ring, the hind tarsi brownish.

Male. Front yellow, with a more or less distinct brown spot above each antenna; cross-bands on the abdomen broader than in the female, and distinctly broader than the black interval between them; posteriorly, they are often nearly straight, sometimes distinctly arcuate, especially the third band. The yellow spots on the second segment are not coalescent, but separated by a narrow black interval (in some specimens subcoalescent); the fifth segment is yellow, with a black spot in the middle. The four anterior femora are black at the base; the hind femora are usually black, with a yellow tip; sometimes there is a trace of yellow at the base; hind tibiæ usually with a brown ring in the middle.

Habitat.—British Possessions, New England, New York, Delaware, Virginia. In Detroit, Mich., in August, I found this to be the most common species. It seems also to be common in Texas. Sixteen males and eight females.

S. americanus, ♀, differs from *S. abbreviatus*, ♀, besides being larger, in the presence of a brown stripe in the face, and of brown spots above the antennæ; in the spots of the second segment being altogether coalescent (instead of narrowly interrupted); in the cross-bands not touching (or hardly touching) the abdominal margin, while in *S. abbreviatus* the contact is broad and distinct; in the cross-bands being (in most specimens) more straight, less sinuate posteriorly.

S. americanus, ♂, differs from *S. abbreviatus*, ♂, besides being larger, by the brown stripe on the face, the more straight second cross-band (less sinuate posteriorly) and by the coloring of the hind femora. In those specimens of *S. americanus* which have the hind femora altogether blackish, the yellow space at the tip is narrower than the yellow space in ordinary specimens of *S. abbrèviatus*, ♂. The yellow spots on the second segment (in all my ♂ specimens) do not touch the lateral margin; the black interval, although small, is distinct; in all my ♂ *abbreviatus* these spots distinctly come in contact with the lateral margin. The oral margin is not infuscated here (except, of course, at the point of contact with the facial brown stripe). Attention should also be paid, in both sexes, to the difference in the extent of the black coloring of the cheeks, as described above."—Osten Sacken, l. c.

A number of specimens from New England and four (♂, ♀) from Montana agree throughout with the preceding description. The front above is rather narrower than usual.

Syrphus opinator.

Syrphus opinator Osten Sacken, Western Diptera, 327, 1877.

Habitat.—Washington Territory, California, Oregon!

"♂, ♀. Length, 9 to 11^{mm}. Male. Eyes glabrous; face, including the cheeks, altogether yellow or reddish yellow; no brown stripe on the

facial tubercle; antennæ brown, reddish on the under side; front above the antennæ yellow, the angle between the eyes greenish black, yellowish pruinose, beset with black hair; small brown marks above the root of the antennæ. Thorax metallic bluish-green, densely beset with yellow pile; the broad genimate, grayish stripe in the middle is subobsolete. Scutellum yellowish metallic-opalescent, beset with black pile. Abdomen black, opaque on the anterior, subopaque on the posterior part of the segments; the two yellow spots on the second segment are prolonged anteriorly, so as to reach the lateral margin of the segment at its anterior corner; the two other cross-bands are rather narrow (not much broader than one-fourth of the breadth of the segment), attenuated in the middle (even subinterrupted in one of the specimens); their ends are separated from the lateral margin by a narrow black interval; posterior margin of the fourth segment with a narrow reddish border; that of the fifth still narrower. Legs reddish yellow; proximal half (or nearly so) of the four anterior femora black; hind femora black, except at tip; hind tarsi infuscated. Stigma brownish; both costal cells distinctly tinged with brown.

Two specimens.

Female. I have two specimens, which I refer to this species, on account of their entirely yellow face and the course of the cross-bands, which is nearly the same as in the males; but the femora are entirely reddish yellow, coxæ and trochanters remaining black. Vertex greenish black; front metallic green, densely yellowish pollinose, its lower part reddish yellow, except two brownish marks above the root of the antennæ."—Osten Sacken, l. c.

I have examined nearly fifty specimens of this species, male and female, from California, Oregon, and Washington Territory, which agree closely with the above sufficiently full description. The yellow cheeks and face, bare eyes, and the second and third abdominal cross-bands not reaching the lateral margin will distinguish the species.

Syrphus geniculatus. (Plate IV, fig. 3.)

Syrphus geniculatus Macquart, Dipt. Exot., ii, 2, 101, 24; tab., xvii, fig. 5: Osten Sacken, Proc. Bost. Soc. Nat. Hist., 1875, 159.

Habitat.—Newfoundland (Macq.), White Mountains!

♂. Length, 7.5 to 8mm. Eyes bare. Antennæ unusually small for a Syrphus, short, third joint nearly round; black throughout. Face produced downward and forward, the tubercle prominent; dull yellowish on the sides and below the antennæ, but in large part obscured by a greenish-black reflection, the yellowish part clothed with whitish pollen; cheeks and lower part of the face greenish-black, extending up further in the middle, shining on the tubercle. Frontal triangle greenish-black, thickly covered with yellowish dust, and with long black pile; vertex black. Thorax black, or dark brown with a faint, greenish tinge, and with rather abundant black pile. Pleuræ whitish dusted and with light colored pile; scutellum obscurely yellowish, with black

pile. Halteres yellow; tegulæ with a brownish border. Abdomen elongate oval, black, opaque, only a little shining; second segment with a very small reddish-yellow spot on the sides before the middle; third and fourth segments with a narrow cross-band near the front, broadly and rectangularly interrupted, touching the lateral margin; narrow hind margins of the fourth and fifth segments and anterior angles of the fifth yellow. Legs dark brown; the tips of the femora and base of the tibiæ only narrowly and obscurely yellowish; the hind legs and all the tarsi black, the hind metatarsi a little thickened. Wings obscurely hyaline, the stigma only a little darker, all the veins blackish.

"Differs from *S. umbellatarum* in being a little smaller (about 7.5^{mm}); the face in profile is much more projecting, the facial tubercle a metallic blackish-green, which color extends on both sides along the oral border; in the other species the facial tubercle bears a distinct stripe; in the female the sides of the face, powdered with yellow pollen, have a brownish-yellow ground color; the antennæ are inserted on black ground; the front in the female is brownish green, much broader than in *S. umbellatarum;* the pollen on the sides is much less thick; it follows on both sides the orbit of the eye to about one-half the distance between the ocelli and the antennæ, and does not reach as much towards the vertex as in the other species; it does not form a well-defined arch; the glabrous space above the antennæ is smaller. The thorax is brownish green (not bluish green); the scutellum has a stronger bluish metallic reflection: the yellow markings on the abdomen are somewhat narrower, and paler yellow; the four anterior legs are of a darker reddish brown, sometimes almost black, with paler knees; when the legs are paler the base of the femora does not appear abruptly tinged with black, as in *S. umbellatarum*."—Osten Sacken.

Syrphus umbellatarum.

† *Syrphus umbellatarum* Schiner, Fauna Austr., i, p. 307.
† *Syrphus guttatus* Walker, List, etc., iii, 586.
Syrphus 6-quadratus Walker, List, etc., 586.
Syrphus umbellatarum Osten Sacken, Proc. Bost. Soc. Nat. Hist., 1875, 151.

Habitat.—White Mountains, New Hampshire, Arizona!

"♂, ♀. Length, 8 to 9^{mm}. Antennæ blackish brown. Thorax shining metallic green; pleuræ thickly whitish pollinose and with whitish pile. Abdomen subopaque black, with three interrupted cross-bands, about one-third of the width of the segments, situated on their anterior parts.

"*Female.*—Eyes glabrous. Face yellow, with a whitish pollen almost concealing the ground color; in the middle a brown stripe, crossing the facial prominence, but abruptly stopping before the base of the antennæ; this stripe does not run down on both sides along the oral margin (it does so for a short distance in a very few specimens); oral margin yellow, as well as the cheeks; front and vertex bluish green (not brownish green); the yellowish-gray pollen on the front forms a well-marked arch, sub-interrupted in the middle, leaving bare on one side the vertex,

deux macules médianes lunulées, allongées, amincies latéralement et atteignant les côtés, 3e et 4e avec une large bande basilaire, atténuée latéralement et atteignant aussi les côtés, ce dernier ainsi que le 5e bordés d'un jaune obscur, tous deux d'un jaune pâle; pieds fauves, hanches, base extrême des cuisses et tarses largement noirs, pieds postérieurs avec un large anneau brunâtre diffus, sur les cuisses, les tibias presque en entier et les tarses d'un brun foncé; ailes hyalines, macule stigmatique allongée, d'un gris jaunâtre. Californie.—1 specim.—Bigot, l. c.

Syrphus maculifrons.

Syrphus maculifrons Bigot, Ann. Soc. Ent. Fr., 1884, 89.

Habitat.—Oregon (Bigot).

Long. 10 *mill.* ♂. *Antennis fulvis, apice nigris, segmento* 3° *ferè orbiculari; frontè fusco tomentosâ; facie flavâ, plus minus rufescente, utriuque pallidiore, ore nigro; thorace œnescente, utriuque obscurè flavido; scutello testaceo, parum metallescente; calyptris pallidè fulvis, halteribus flavis; abdomine nigro, utriuque maculis tribus subquadratis flavis; pedibus fulvis, femoribus posticis obscurè fusco annulatis, tibiis præter trientem basalem, tarsis plus minus infuscatis; alis obscurè hyalinis.* ♀. *Simillima; fronte nigro nitido latè vittatâ.*

♂. Antennes d'un fauve rougeâtre, dessus et extrémité du 3e segment noirâtre, ce dernier de forme ovaloïde arrondie, chète rougeâtre; front brun à poils noirs, face d'un jaune plus ou moins rougeâtre, bords de l'ouverture buccale et dessous de la callosité, noirs; thorax d'un bronzé obscur à duvet jaunâtre, latéralement teint d'un jaunâtre obscur; flancs noirâtres avec duvet jaunâtre; écusson jaunâtre avec des reflets bronzés, souvent peu marqués; cuillerons testacés, balanciers jaunes; abdomen d'un noir mat, incisions luisantes, 2e, 3e et 4e segments avec, chacun, une grande macule latérale presque carrée, ayant les angles arrondis, 4e avec deux macules latérales obliques atteignant les côtés, les derniers segments d'un noir luisant lisérés de fauve; pieds fauves, cuisses postérieures avec un anneau obscur peu distinct, tibias et tarses postérieurs d'un brun plus ou moins foncé, sauf à la base desdits tibias; ailes presque hyalines, macule stigmatique allongée, d'un testacé obscur. ♀. Semblable au mâle, front jaunâtre avec une large bande médiane d'un noir luisant. Amér. septentr. (Mont Hood).—3 ♀, 2 ♀.—Bigot.

ADDITIONAL NORTH AMERICAN SPECIES.

Syrphus agilis Bigot, Annales Soc. Ent., France, 1884, 92.—Mexico.
Syrphus Antiphates Walker, List, etc., iii, 589.—Jamaica.
Syrphus colludens Walker, Trans. Ent. Soc., N. Ser. v, 292.—Mexico.
Syrphus delineatus Macquart, Dipt. Exot., 1er Suppl., 139; pl. xi, fig. 13.—Mexico.
Syrphus eupeltatus Bigot, Annales Soc. Ent. France, 1884, 91.
Syrphus jactator Loew, Wien. Ent. Monatschr., v, 40; Centur., vi, 46.—
Syrphus limbatus, Wiedemann, Auss. Zw. Ins., ii, 133, 30.—West Ind
Scaeva limbata Fabricius, Syst. Antl., 251, 10.
Syrphus mutuus Say, J. Acad. Phil., vi, 164, 2; Compl. Wr., ii,

Syrphus nigripes Loew, Centur., vi, 44.—Cuba.
Syrphus praeustus Loew, Centur., vi, 45.—Cuba.
Syrphus quadrifasciatus Bigot, in R. de la Sagra, etc., 804; pl. 20, fig. 5.—**Cuba.**
Syrphus radiatus Bigot, in R. de la Sagra, etc., 804.—Cuba.
Syrphus stegnus Say, J. Acad. Phil., vi, 163, 1; Compl. Wr., ii, 358.—**Mexico.**

DIDEA.

Didea Macquart, Hist. Nat. Dipt., i, 508, 1834.
Enica Meigen, Syst. Beschr., vii, 140, 1838.

Large, metallic black, not bare species, with flattened yellow or greenish-yellow banded abdomen. Head hemispherical, broader than the thorax. Antennæ short, third joint oval, with a basal, bare arista. Face gently concave below the antennæ to the obtuse tubercle, thence receding; chiefly yellow. Eyes contiguous in the male, bare or pilose. Thorax without yellow on the dorsum, though it may be pollinose near the sides. Scutellum yellow translucent. Abdomen broadly oval and flattened, broader and much longer than the thorax. All the legs slender. Wings comparatively short and broad; third vein with a considerable sinuosity bending into the first posterior cell; otherwise as in Syrphus. Type of genus, *D. fasciata* Macquart, Europe.

This genus cannot be distinctly separated from Syrphus; as its chief characteristic, the curvature of the third vein, is also found in one of the varieties of *Syrphus arcuatus*. It is, however, useful, and may be retained.

TABLE OF SPECIES.

1.—Third joint of antennæ obtusely pointed at tip; eyes bare; abdominal cross-bands broader toward, but not quite reaching, the lateral margin of the abdomen . . . . . **fuscipes**
Third joint of antennæ obtusely rounded at the tip 2
2.—Eyes bare; cross-bands broadly interrupted. (See *Syrphus arcuatus* var. *lapponicus*.)
Eyes thinly pilose; the abdominal cross-bands reach narrowly quite to the lateral margin . . . . . **laxa**

Didea fasciata fuscipes.

Didea fuscipes Loew, Centur., iv, 82; Osten Sacken, Cat. Dipt., 245, note 212.

Habitat.—Connecticut, Pennsylvania!

♂, ♀. Length, 11mm. Eyes bare. Antennæ black, the third joint at the base sometimes reddish, elongate oval, obtusely pointed at the tip; arista reddish. Face yellow, with a small, elongate, brownish spot on the tubercle. Front yellow, with two brownish spots above the antennæ, or, in the female, with an inverted V-shaped brown stripe connected with the black of the upper part of the front. Orbits thickly yellowish pollinose, and with a fringe of yellowish-whitish pile. Thorax shining greenish black, on the meso, ptero, and sternopleuræ yellow, thickly covered with similar colored pollen and pile. Scutellum light yellow, translucent. Abdomen black, with four yellow cross-bands, the first

consisting of two large ovate spots, narrowly separated and reaching the lateral margins; second and third cross-bands broad, separated from the lateral margins by a black narrow border; they are much narrower in the middle of the segments, the front margin straight, touching the anterior edge of the segments; fourth band similar, but much smaller; posterior margin of the segments shining, dilated in the middle. Legs brown, the posterior tibiæ and all the tarsi blackish; sometimes the legs are luteous, the base of femora, distal portion of tibiæ, and the tarsi brown. Wings grayish hyaline, the base before the humeral cross-vein and the stigma brown, the remainder of the subcostal cell and the costal cell may be brownish; third vein rather deeply curved near the middle of the first posterior cell.

Three specimens, Connecticut, Pennsylvania (S. Auxer, E. Keen).

This species, as it has been called, shows but slight differences from *D. fasciata* of Europe. The propriety of separating them specifically is, to say the least, very doubtful. The only real difference appears to be that the legs are a little lighter colored. In a single specimen that I have from Holland the bands are narrower on the abdomen and the brownish color of the wings fainter; the legs are black, with the base of the tibiæ reddish.

Didea laxa. (Plate IV, figs. 4, 4a.)

Didea laxa Osten Sacken, Bull. Buff. Soc. Nat. Sci., iii, 56; Cat. Dipt., 245, note 212.

Habitat.—New Hampshire, California, Washington Territory, Oregon!, Michigan, Maine (O. S.).

♂, ♀. Length, 10 to 13mm. Eyes pilose, more distinctly so in the male. Antennæ black, third joint oval, obtusely rounded on the end; arista black. Face yellow, with a broad shining black or brown stripe, not reaching the antennæ. Cheeks brown. Frontal triangle black, yellowish dusted along the eyes, pile black; front in female shining black; on the sides the yellowish-gray dust extends up along the eyes and expands in the middle, nearly meeting. Thorax blackish metallic green, shining. Scutellum dull brownish yellow, with a slight greenish or bluish metallic luster. Pleuræ with a whitish vertical stripe. Abdomen black or bluish black, with greenish-yellow cross-bands; on the second segment two large oval spots, reaching (rarely narrowly separated from) the lateral margins; third and fourth segments each with a cross band, extending narrowly quite to the lateral margins, biconvex behind, and with a sharp posterior notch in the middle, in some specimens distinctly interrupted; fourth segment behind narrowly yellow in the middle, forming with the anterior angles of the fifth an entire cross-band; fifth segment behind yellow; pile on the black portions black, elsewhere yellowish. Venter black, the second, third, and fourth segments each with a broad cross-band, narrowed in the middle. Legs yellowish red; proximal half of front and middle femora black, hind femora black, except at tip; hind tibiæ with a brown ring in the middle, some-

times extending over the whole tibiæ; front and middle tarsi brownish, except the base and tip; hind tarsi on the three intermediate joints blackish; the metatarsi also sometimes blackish. Wings with a grayish tinge; stigma brownish; veins on basal part red; curvature of the third vein more shallow than in *D. fuscipes*.

Three specimens from the White Mountains (Dr. George Dimmock, 1506) and thirty-three from Oregon and Washington Territory; also, three from California. In some of the Western specimens the front and middle tibiæ have a small brownish ring.

This species corresponds to *D. alneti* of Europe.

XANTHOGRAMMA.

Xanthogramma Schiner, Wien. Ent. Monatschr., iv, 215, 1860.

Moderately large, nearly bare, species, black, with yellow markings on head, thorax, and abdomen. Antennæ shorter than the head, third joint oval, arista basal, bare. Face yellow, tuberculate. Eyes bare, contiguous in the male; front long in the female, narrowed above. Thorax with yellow lateral stripes. Scutellum yellow, its base black. Abdomen more than twice as long as, and wider than, the thorax; elliptical or with the sides nearly parallel, not club-shaped. Legs simple, slender. Wings as in *Syrphus*, the third vein often gently curved into the first posterior cell. Type of genus *X. ornata* Meigen, Europe.

This genus cannot be sharply distinguished from *Syrphus*, as, except in *æqualis* and *flavipes*, the lateral dorsal stripes are not much more conspicuous than in certain species of *Syrphus*.

TABLE OF SPECIES.

1.—Dorsum of thorax before the scutellum with two coalescent light yellow spots; wings with a brown anterior margin . . . . . **æqualis**

Dorsum of thorax without yellow spots on the hind margin; wings not brown in front 2

2.—Pleuræ with light yellow spots . . . . . **flavipes**

Pleuræ without distinct light yellow spots 3

3.—The yellow band on the second abdominal segment attains the lateral margin. **emarginata**

The yellow band of the second segment is separated by a distinct black interval from the lateral margin 4

4.—All the cross-bands of abdomen broadly interrupted . . . . . **divisa**

All the cross-bands not broadly interrupted . . . . . **felix**

Xanthogramma felix.

Xanthogramma felix Osten Sacken, Bull. Buff. Soc. Nat. Sci., iii, 67; Cat. Dipt., 136 and 247, note 215; Williston, Proc. Phil. Soc., xx, 311.

Habitat.—Illinois, New York (O. S.), Connecticut!

♀. Length 9.5 to 10.5mm. Face and cheeks yellow (in all my specimens, except one, the face has the brownish-red tinge, which the faces

of Syrphus sometimes assume); vertex dark metallic green, emitting a stripe of the same color, which reaches the base of the antennæ, where it expands a little; between this stripe and the eyes the front is yellow. Antennæ black, sometimes faintly reddish on the under side, near the suture of the second and third joints; third joint rather large, oval, blunt. Thoracic dorsum of a rather bright metallic green; on each side a yellow stripe runs from the humerus to the callosity near the scutel; the latter yellow, the extreme base and corners blackish, or brown. Pleurae with a large, ill-defined yellow spot below the wings. First abdominal segment with a yellow spot each side (just under the halteres); the first cross-band, (on the second segment), is either interrupted by a very narrow black line in the middle, or entire; the second band is coarctate in the middle, its hind margin being a shallow obtuse angle; the same may be said of the third band, except that the obtuse angle is deeper, and often has a notch in the middle, which sometimes cuts the band in two; there is a narrow fourth band at the base of the fifth segment, encroaching upon the hind margin of the preceding segment; the fifth segment has a narrow yellow posterior margin. Legs yellow, hind-legs black or brown, except the base of the femora, and a space on both sides of the knees. Wings with a distinct brownish tinge on the distal half, anteriorly; stigma brownish; sometimes the whole wing has a brownish yellow tinge.

"Habitat, West Point, N. Y., in September 8–10, three females; Illinois; Pennsylvania. (The specimen from the latter locality is smaller, wings more hyaline, legs and antennæ of a paler color). The first and third bands are as often interrupted as not; the second often shows a vestige of an interruption in the shape of an indistinct blackish line in the middle."—Osten Sacken, l. c.

A single female specimen from Connecticut (Dr. L. T. Day) agrees very well with the foregoing description, except that the third joint of the antennæ is black above and at the tip, and the other joints are reddish. The first and third cross-bands of the abdomen are narrowly interrupted, the second entire, but emarginate behind.

Xanthogramma divisa.

Xanthogramma divisa Williston, Proc. Am. Phil. Soc., xx, 311.

Habitat.—Washington Territory, White Mountains!

♀. Length 9 to 11mm. Face and cheeks yellow, or reddish-yellow. Face nearly perpendicular, gently concave below the antennæ, and with a large obtuse tubercle below. Front above metallic greenish-black, continued as a broad stripe to the base of the antennæ, somewhat expanded below; on the sides yellow. Antennæ black; somewhat reddish below on the sides of the second, and of the third joint near the base. Dorsum of thorax deep metallic green, with rather ill-defined yellow lateral stripes. Pleurae with a large ill-defined spot. Scutellum a somewhat translucent yellow, its base narrowly black. Abdomen:

first segment with a small yellow spot on each side, just under the halteres; second segment with an oval spot on each side, not reaching the lateral margin, somewhat attenuated toward the inner end; third and fourth with large rectangular spots separated by nearly their own width, and not quite reaching the lateral margin; fifth with an anterior fascia, narrower in the middle, and encroaching slightly upon the preceding segment. Legs yellow, anterior and middle femora sometimes narrowly brown annulate near the base; posterior legs mostly brownish or blackish, except the base of femora, and broadly on the knees. Wings hyaline with a slight smoky tinge; stigma yellowish.

Eight specimens, Washington Territory, and a single female from the White Mountains, New Hampshire, July 25.

This species is very closely related to *X. felix*, and I am not at all sure but that it may be the same. The broadly interrupted bands of the abdomen, however, seem to indicate a specific difference. The abdomen in all my specimens is broadest at the tip of the third segment; in my single specimen of *X. felix* it attains its full width at the end of the second.

Xanthogramma emarginata.

Scæva emarginata Say, J. Acad. Phil., iii, 91, 5; Compl. Wr., ii, 79.

Syrphus emarginatus Wiedemann, Auss. Zw. Ins., ii, 119,4.

? *Allograpta emarginata* Osten Sacken, Cat. Dipt., 126. (The query is Osten Sacken's.)

Habitat.—Florida, Pennsylvania, New Hampshire!

♂, ♀. Length, 10 to 11^{mm}. Face wholly yellow (or reddish-yellow). Antennæ reddish; the third joint near the base and on upper part blackish. Frontal triangle, just above the antennæ, with two blackish spots, connected by a brownish arcuated band; elsewhere the triangle is yellowish pollinose. Front in female shining metallic green: on the sides, from a little below the ocelli, yellow like the face, and yellow pollinose; pile black. Thorax shining bronze-green, with a rather broad, not conspicuous yellow stripe on each side; an ill defined yellow spot on the pleuræ. Scutellum translucent yellow, with black and yellow pile. Abdomen opaque black; first segment shining, yellow on the sides, near the halteres; second segment with the extreme front angles yellow, and two large, oval spots, narrowly separated, and only a little attenuated before the lateral margins, which they touch; third segment narrowly yellow at the anterior angles, and near the middle with a broad yellow cross-band, not attenuated at the sides, separated from the lateral margins, or the anterior angles only, nearly touching, behind in the middle with a broad, angular emargination, reaching about half way through the band; posterior edge of the third segment also narrowly yellow, but not reaching the sides, forming with the yellow margin of the next segment a narrow, gently arcuate band; fourth segment with a similar median cross-band, but the posterior emargination deeper, and more acute, nearly cutting the band in two (in some speci-

mens distinctly interrupted), the posterior margin of the segment is more broadly yellow; fifth segment with a triangular basal spot on each side, and the posterior margin yellow. Legs yellow; the hind femora and tibiæ with a rather broad ring, and the hind tarsi brown. Wings hyaline; stigma light yellowish.

A single specimen, from Professor Riley's collection, labelled "269, found under bark of cotton tree, Fla. Apr. 20, '74." Another specimen was received from Mr. Eugene Keen, of Philadelphia, collected in Pennsylvania; also three males and one female, collected by myself, near the base of Mt. Washington, near evening, July 25.

In a specimen from the White Mountains, examined since the above was written, I find the spots of the second segment distinctly separated from the lateral margin. It might readily be confounded with specimens of *X. felix*, but the species offers other distinct differences. In *X. emarginata* the last section of the fourth vein is longer and more oblique; the first posterior cell broader; the first pair of abdominal spots are more broadly separated, and the two following bands more rounded on their posterior angles; the black of the abdomen is less shining, the dorsum of the thorax more metallic than in the two specimens of *X. felix* known to me.

Xanthogramma flavipes.

Doros flavipes Loew, Centur., iv, 83.

Habitat.—Pennsylvania, Connecticut!, New York (O. S.)

♂, ♀. Length, 7 to 10mm. Head pure light sulphur-yellow; in the female the front much narrowed above, with a slender black stripe reaching from the black vertex to the base of the antennæ. First joint of antennæ yellow; second joint yellowish reddish; third joint blackish, reddish toward the base below, rounded, larger in the female. In the male an inverted V-shaped ridge above the antennæ, with a small black dot in the apex. Face considerably receding, with a prominent tubercle below the middle; pile yellow, on the posterior orbits white. Thorax shining greenish black, the lateral stripes entire, bright yellow, sharply distinguished; on the pleuræ, a middle stripe, reaching on the sterno-pleura, a spot above the anterior coxæ, and the sides of the metanotum, yellow. Scutellum light yellow along its margin, black at the base. Abdomen velvety black. In the male the first segment shining; second segment with a broadly interrupted yellow fascia near the front part; third segment with the broadest fascia entire, on the front part, emarginate behind; fourth segment similar, and also on the hind border narrowly yellow, not reaching the sides, but forming with the anterior angles of the fifth segment a strongly arcuated band, the latter segment yellow behind; hypopygium blackish; third segment across the middle with a narrow shining fascia, which in some specimens may be reddish; fourth segment with a broader shining cross-band; fifth wholly so. In the female the first three cross-bands are narrower than in the male, of an even width, not interrupted nor emarginate, the shining

fasciæ across the second, third, and fourth segments are broader and sometimes quite reddish or yellowish in the middle; pile yellow on the yellow portions, black elsewhere. Legs yellow; the hind tarsi reddish or blackish, except the last two joints. Wings hyaline; the stigma yellowish.

Six specimens from Connecticut. This species is found usually in thick, shady vegetation, in damp places.

Xanthogramma æqualis. (Plate IV, fig. 6.)

Doros æqualis Loew, Centur., iv, 84.

Habitat.—Pennsylvania (Lw.), District of Columbia!

♀. Length, 8mm. Face bright yellow, a brown spot on the cheeks, and a small faint one on the tubercle. Antennæ black, the basal joints and base of the third joint reddish. Front rather narrow above; yellow, black at the vertex, continued as a rather narrow black stripe to the base of the antennæ. Thorax black, nearly bare; near the middle of the dorsum with two faint pollinose stripes; on the lateral margin with a narrow, well-defined, bright-yellow stripe; on the posterior margin, with a rather small transverse yellow spot, cut in two, or nearly so, by a rectangular black emargination in front. Pleuræ with two oval, bright yellow spots, one on the sterno-pleuræ and one above the front coxæ. Scutellum reddish, blackish at the base, along its border with a row of short, light-colored hairs. Abdomen cylindrical in front, compressed behind, shining black, with rather narrow bright-yellow bands, as follows: An arcuate band near the middle of the second segment; a straight one at the base of the third segment; one at the base and one at the posterior margin of the fourth segment, the posterior one dilated in the middle; on the posterior margin of the third segment there is a small median yellow spot, and on the fifth segment there is a slender longitudinal stripe, not quite reaching the anterior margin. Venter with four yellow cross-bands, the first three rather broad, and situated upon the posterior margin of the preceding and anterior margin of the following segments; the fourth band is linear, and situated upon the hind margin of the fourth segment. Legs yellow; the femora broadly, in the middle (especially the hind pair), the tip of the hind tibiæ, and the hind tarsi, reddish or brownish. Wings nearly hyaline, along the front border rather narrowly and equally brown.

♂. Length, 9.5mm. Head yellow, vertical triangle and occiput black, the latter white pollinose on the margin. Frontal lunule, antennæ, and cheeks blackish pitchy. Thorax black, clothed with lutescent and whitish blackish pile; dorsum on each side with a yellow stripe, and on the [posterior] margin with two confluent spots; besides these, with two, more obsolete, whitish pollinose stripes. Pleuræ yellow bimaculate. Scutellum testaceous. Abdomen of equal width, black, shining, with three narrow yellow fasciæ; the first moderately arcuate, in the middle of the second segment; second and third straight, at the base of the segments, both narrowly interrupted; basal fascia of fifth seg-

ment concealed; posterior margins of third and fourth segments yellow, fifth segment with a yellow triangle. Venter black, with three narrow fasciæ, and the hind margin of the fifth segment yellow. Anterior femora fuscous, on their posterior sides fuscous black, on the apical third yellow; hind femora fuscous black, base luteous, tip yellow; tibiæ yellow, distal half of the hind ones fuscous ochraceous; anterior tarsi luteous, hind ones ochraceous fuscous. Wings very dilutely subinfuscate, costa broadly and of equal width, clouded with fuscous.—Translation from Loew., l. c.

A single female from Virginia, for which I am indebted to the kindness of Mr. Theo. Pergande, belongs, I believe, to this species, notwithstanding the differences from Loew's description in the markings of the abdomen and legs. It is a very striking species, and may perhaps be a true *Doros*.

An examination of the type specimen assures me that the male and female here described belong together.

ALLOGRAPTA.

Allograpta Osten Sacken, Bull. Buff. Soc. Nat. Sci. iii, 49, 1876.

Elongate, small, bare species, thorax with yellow lateral stripes, the abdomen with yellow bands, and on the fourth and fifth segments with two slender median stripes and oblique side spot. Eyes in the male with an area of distinctly enlarged facets on upper part. Ocelli as in *Syrphus*. Thorax without median cinereous dorsal stripe. In this latter and in other respects as in *Syrphus*. Type of genus, *A. obliqua* Say.

TABLE OF SPECIES.

Face wholly yellow, or in the middle only faintly brownish . . . . . **obliqua.**
"Face with a bluish black stripe, extending from the oral margin to the antennæ." **fracta.**

Allograpta obliqua.

Scaeva obliqua Say, J. Acad. Phil. iii, 89, 2; Compl. Wr. ii, 78.
Syrphus obliquus Say, Amer. Ent., pl. xi; Compl. Wr. i, 23; Wiedemann, Auss. Zw. Ins., ii, 138, 39 (translation from Say); Schiner, Novara Exped., 353, 43.
Syrphus securiferus Macquart, Dipt. Exot., ii, 2, 100, 22; id., Ibid., 1er Suppl., 138. (female). (Type compared by Osten Sacken.)
Sphærophoria Bacchides Walker, List, etc. 594. (Type compared by Osten Sacken.)
Syrphus dimensus Walker, Dipt. Saunders., 235. (Type compared by Osten Sacken.)
Syrphus signatus v. d. Wulp, Tijds. v. Ent., x, 144, 15; pl. iv, fig. 12.
Allograpta obliqua Osten Sacken, Bull. Buff. Soc. Nat. Sci., iii, 49; Cat. Dipt., 126 and note 214; v. d. Wulp, Tijds. v. Ent., xxvi, 1, 33; pl. i, fig. 1.

Habitat.—Atlantic and Pacific States! Argentine Republic (v. d. Wulp).

♂, ♀. Length, 6 to 7mm. Face yellow, often with a bluish reflection, slightly brownish on the tubercle. Frontal triangle yellow; front in the

female shining black on the vertex, continued as a broad stripe (broadest below) to the antennæ; on the sides the yellow of the face continues up along the eyes nearly to the ocelli. Antennæ reddish-brown, blackish on the upper part of the third joint. Thorax deep shining green, on the sides with a yellow stripe, reaching from the humeri to the suture, where it is sharply truncate; post-alar callosity also yellow. Scutellum wholly light yellow, faintly reddish on the disk; pile black. Abdomen black, or brown; first segment, except a slender transverse spot on each side behind, yellow; second segment with a slender yellow anterior fascia, and a broader one in the middle, about a third of the width of the segment, straight and but slightly widened at the sides; third segment with a broad arcuate band, not quite touching the posterior angles on the sides; fourth segment with two slender parallel stripes, leaving a slender black stripe between them, on each side a broader, oblique, oval spot, touching, or narrowly separated from the anterior end of the yellow longitudinal stripe, and reaching to the posterior angles; fifth segment similar, but the side spots less oblique. Legs light yellow; last three joints of all the tarsi, the hind tibiæ, except the base and a middle ring, and a ring on outer part of hind femora, brownish. Wings hyaline, veins black.

A widely spread and common species. I have it from Connecticut, New Hampshire, Kentucky, Colorado, California, and Washington Territory. Schiner and v. d. Wulp record it from South America.

Allograpta fracta.

Allograpta fracta Osten Sacken, West. Dipt., 331.

Habitat.—California (O. S.)!

"♂. Length, 7^{mm}. Face, including the frontal triangle, pale yellow, slightly opalescent; a bluish-black stripe extends from the oral edge to the antennæ, forming a semicircle above them. Antennæ reddish, third segment brown along the upper edge, vertex black. Thorax bright metallic green, a pale yellow stripe on each side between the humerus and the root of the wings; ante-scutellar [post-alar] callosity yellowish; scutellum of a saturate yellow, the extreme corners dark; halteres with yellow knobs. First abdominal segment metallic greenish black, its extreme anterior margin only yellow; the rest of the abdomen black, opaque; an interrupted yellow cross-band on the second segment equal to about one-third the segment in breadth; a somewhat broader, slightly arched, and not interrupted yellow cross-band on the third segment; on the fourth, two narrow, parallel, longitudinal lines in the middle, and an obliquely-placed, large, oval spot on each side of them, yellow; the narrow fifth segment shows a yellow picture, somewhat resembling that of the fourth segment. Legs yellow; tip of tarsi brownish; hind femora with a brown ring before the tip; hind tibiæ with two such rings, one before the middle, the other before the tip; hind tarsi brown, except the under side of the first joint. Wings hyaline; stigma brownish yellow.

"*Habitat.*—Santa Monica, California, February 20, 1876. A single male."

The chief differences that this description shows from *A. obliqua* are in the black stripe on the face, and the first abdominal segment being black.

MESOGRAPTA.

Toxomerus Macquart, Dipt. Exot., 5e Suppl., 92, 1855.
Mesogramma Loew, Centur., vi, 47, 1865.
Mesograpta Loew, Centur., vol. ii, p. 290, 1872.

Small, somewhat elongate species, thinly pilose, shining black, with yellow markings on head, thorax, and abdomen. Head hemispherical, face small, short, prominent in the middle. Antennæ situated near the middle of the head in profile, short, third joint oval, arista basal, bare. Eyes narrowly contiguous in the male, midway between the antennæ and ocelli; vertical triangle long, acute; front in female longer than the face, narrowed toward the vertex. Ocelli in both sexes remote from the vertex. Dorsum of thorax with a median cinereous linear stripe and lateral yellow margins. Scutellum black, with yellow border. Legs rather slender; hind femora in the male sometimes thickened and arcuate. Wings as in Syrphus. Type of genus, *M. parvula* Loew, North America.

The species are very variable in the coloring of the abdomen, and caution should be used in founding new species on such differences. Indeed here, as elsewhere in this family, specific characters are usually more or less doubtful when not based upon some structural differences.

TABLE OF SPECIES.

1.—Hind femora in male thickened and arcuate, the tibiæ dilated at tip . **geminata**
Hind femora in male simple 2
2.—Scutellum yellow; legs yellow, except the hind tarsi 3
Scutellum black with a yellow margin; front of female much narrowed above: hind femora in part black . . . . . **parvula, Boscii**
Scutellum black or brown with a yellow border; front of female above only a little narrowed; hind femora wholly yellow . . . . . **marginata, var.**
3.—Front of female only a little narrowed above; third-fifth abdominal segments with narrow lateral yellow margins . . . . . **marginata**
Front of female much narrowed above; third-fifth abdominal segments not yellow on the margins . . . . . **polita**

For other species, see descriptions, and also appendix.

Mesograpta polita.

Scæva polita Say, J. Acad. Phil., iii, 68; Compl. Wr., ii, 77.
Syrphus politus Say, Amer. Entom., i, pl. xi, fig. 3; Wiedemann, Auss. Zw. Ins., ii, 132, 28.
Syrphus cingulatulus Macquart, Dipt. Exot., 4e Suppl., 155, 53. (Type compared by Osten Sacken.)
Syrphus hecticus Jaennicke, Neue Exot. Dipt., 90.

Habitat.—North Carolina, Kansas, Connecticut, Georgia!, Cuba, (O. S.).

♂, ♀. Length, 8 to 9mm. Face yellow, with whitish dust on the sides, antennæ a little more reddish yellow, narrowly brownish or blackish above. Frontal triangle yellow; vertical triangle black, pollinose in front of the ocelli. Front in female black, rather thickly yellowish-whitish pollinose; on the sides below the ocelli narrowly yellow. Occiput grayish-yellowish pollinose, silvery on the sides. Median cinereous stripe of thorax very distinct; on the upper border of the yellow lateral stripe indistinctly glaucous green; between these and the middle stripe the color is brownish or olivaceous, indistinctly divided by a cinereous line, the beginning of which in front is dilated and very distinct. Pleuræ shining metallic, with three yellow spots, viz., one on the meso, one on the sterno-pleuræ, and one above the front coxæ, smaller than the others. Scutellum wholly yellow, somewhat reddish on the disk. Abdomen shining black; first segment yellow at the base and sides; second segment with a broad median entire yellow cross-band; third and fourth in the female with a narrow yellow anterior border, and a slender median line, passing through the rather narrow interruptions of the rather broad median yellow cross-bands; fifth segment yellow, except two rectangular, parallel, more or less confluent black spots. In the male the third and fourth segments are yellow or yellowish red, except a pair of black lines on each side, like the three sides of a square, more or less indistinct; fifth segment and the hypopygium wholly yellow. Legs bright yellow; hind tarsi reddish, the terminal joints blackish. Wings nearly hyaline, the stigma dilutely yellow.

Thirty specimens.

Mesograpta parvula.

Mesogramma parvula Loew, Centur., vi., 47.
Mesograpta parvula Osten Sacken, Cat. Dipt., 125.

Habitat.—Georgia!, Florida (Lw.).

♂, ♀. Length, 5 to 6mm. Black, somewhat metallic. Face yellow, silvery pollinose on the sides. Antennæ yellowish, somewhat infuscated. Front in female very narrow above, shining greenish black, bronzed at vertex, yellow on the sides below the vertex. Cheeks black; lateral posterior orbits silvery. Median dorsal cinereous stripe only moderately distinct, on either side of which, and more outwardly, separated by a more shining stripe, a second, more olivaceous, less shining one. Pleuræ shining bluish black with a yellow spot on the mesopluræ, and a more whitish one below; no spot above the front coxæ. Scutellum black, with a yellow margin. Abdomen black; opaque, except the first segment, an anterior and posterior band on the second, and a posterior band on the following segments, shining; yellow markings as follows: base of the first segment, sometimes a slender band on the second, entire or interrupted, a broader anterior band on the third and fourth segments, interrupted, and produced into a process posteriorly at the inner ends; in the interrupted spaces a slender longitudinal stripe; on

the fifth segment a broadly interrupted fascia, in the male more slender than in the female, sometimes yellow with three large oval longitudinal spots. Legs yellow; hind femora with a rather broad, preapical, black ring; the hind tibiæ, except the base and tip, black; hind tarsi more or less reddish, blackish toward the tip. Wings nearly hyaline, stigma subfuscous.

One male and two female specimens from Georgia. The males have the abdomen obscurely brownish reddish beyond the second segment, with narrow indistinct blackish markings. From *M. geminata*, which it closely resembles, it may be distinguished by the hind femora, which are perfectly straight, and somewhat compressed, not curved and cylindrical; the fifth abdominal segment is, in the female, in *M. parvula* much longer proportionally than in *M. geminata*.

Mesograpta marginata.

Scaeva marginata Say, J. Acad. Phil., ii, 92, 6; Compl. Wr., ii, 80.
Syrphus marginatus Wiedemann, Auss. Zw. Ins., ii, 146, 52.
Mesogramma planiventris Loew, Centur., vi, 49.
Syrphus Quintius Walker, Dipt. Saunders., 239.
Mesograpta marginata Osten Sacken, Cat. Dipt., 125.

Habitat.—Atlantic, Southern, Middle, and Pacific States!

♀. Length, 5 to 6^{mm}. Face whitish yellow, thinly pollinose, cheeks black. Antennae reddish yellow, a little fuscous above; arista black. Front only moderately narrowed above, greenish black, shining at the vertex, lightly yellowish pollinose below; on the sides below the ocelli narrowly yellow like the face; posterior orbits yellowish pollinose, in some reflections silvery. Dorsum of thorax olivaceous black, but little shining, median cinereous stripe distinct, bordered narrowly on each side with brownish; pleuræ shining greenish black; beside the yellow spots on the meso and sterno pleuræ, there is a third, minute one, above the front coxæ. Scutellum yellow, with black pile. Abdomen black, shining, narrowly margined with yellow; oval, flattened; first segment at the base, second segment with a median cross-band, third and fourth segments each with a median line and a somewhat oblique large spot on each side attaining the base of the segment, fifth segment with two oblique spots confluent at the tip, yellow. Legs yellow, the hind tarsi a little brownish, blackish at the tip. Wings nearly hyaline.

This description applies to twenty specimens from New York and Connecticut, which agree quite with Say's description, and hence may be considered as the typical *marginata*. This species is variable, scarcely any two specimens being precisely alike in the abdominal markings, which makes it seem strange that Loew should base a species upon such characters. The head in the male differs only in the frontal triangle being yellow and the vertical triangle black. Of the different variations in the abdomen the following are such as my specimens show:

Ten specimens from Colorado, all males, are rather smaller than the Eastern specimens and have the scutellum wholly yellow, except a faint

reddish color on the disk, the yellow band of the second abdominal segment rather broad, and the third and following segments wholly obscurely reddish yellow, except a small circular black spot on the middle of the fifth segment; on two of these are small obscure blackish marks on the third and fourth segments. Three more males from Colorado and four from Western Kansas have the black longitudinal and transverse spots very distinct, so that in most of them the yellow is confined to oblique spots nearly as in the typical form. A single female from Colorado, another from Montana, and several from Western Kansas, have the oblique spots of the third and fourth segments coalescent, leaving only two minute spots in the middle near the front, and on the fifth segment there are a circular median spot and two oblique lateral elongated ones; others, females, have the yellow spots distinct, as in the typical form.

In several female specimens from Georgia and Florida the abdomen is chiefly black, the first segment nearly wholly so, the second either wholly black or with two small yellow spots, and the yellow triangles of the following segments small and slender; in some the scutellum is distinctly darker above, in one almost blackish on the disk; the specimen from Montana, however, shows the same blackish color, and here the yellow spots of the abdomen are confluent. A dozen other specimens from Georgia and Florida present no essential differences from the Western and Northern ones. Specimens from the White Mountains are precisely similar to the first-mentioned males from Colorado, and, hence, it is probable that such specimens will usually be found in high altitudes or latitudes. Specimens from Connecticut agree with all the variations previously mentioned; others from Washington Territory and California offer no peculiarities.

I have no doubt from the study of the material here described that *planiventris* is purely a synonym of *marginata*. The only point in which it appears to differ from the typical varieties is in the greater amount of yellow on the abdomen,—the black on the third and fourth segments confined to two median spots and a posterior interrupted transverse band dilated at the angles, and the fifth segment with only a single spot. Such specimens occur in Connecticut and Colorado, as well as Florida, whence the species was described.

One female specimen from Connecticut and two from California, although otherwise not differing from the more typical form, have the scutellum a deep shining black, narrowly edged with yellow. There are so many intermediate forms that this character, though a striking one, is not of specific value.

Two male specimens from Florida (Professor Riley) have the abdomen wholly reddish yellow, except two small spots on the first segment. I am not sure that they belong to this species.

Mesograpta geminata. (Plate IV, figs. 5, 5*a*.)

Scaeva geminata Say, J. Acad. Phil., iii, 92, 7; Compl. Wr., ii, 80.
Syrphus geminatus Wiedemann, Auss. Zw. Ins., ii, 145, 50.
Syrphus interrogans Walker, Dipt. Saund., 238.
Eumerus privernus Walker, l. c. 225.
Toxomerus notatus Macquart, Dipt. Exot. 5e Suppl., 93, pl. v, fig. 4.
Mesogramma geminata Schiner, Novara Exped., 347, note.
Mesograpta geminata O. Sacken, Bull. Buff. Soc. N. Sci.; Cat. Dipt., 125.
Toxomerus geminatus Williston, Proc. Am. Phil. Soc., xx, 310.

Habitat.—Atlantic and Pacific States!, South America (Schiner).

♂, ♀. Length, 5 to 6mm. Face, frontal triangle, and antennæ, light yellow, the face with white pollen on the sides, the antennæ sometimes a little brownish. Front in female much narrowed above, shining black, narrowly yellow on the sides on the lower half. Posterior orbits thickly whitish dusted. Dorsum of thorax shining black, with opaque linear stripes, the lateral stripes entire, the median cinereous stripe only moderately distinct. Pleuræ shining greenish black; an oval yellow spot on the meso-pleuræ, and a smaller more whitish one below it, narrowly separated. Scutellum with an entire yellow margin. Abdomen broadest at the tip of the third segment; broadly flattened oval in the female; shining black, variable, usually with yellow markings as follows: first segment at the base; second segment with a narrow median cross-band, attenuated in the middle and interrupted; third and fourth segments with a slender median stripe, broader toward the front, and a pair of large spots on the anterior margin, on the third dilated behind on the ends; on the fourth rather deeply marginate on each side behind, the ends rounded and extending backward; fifth segment with the anterior angles yellow and sometimes two projections from the anterior margin near the middle; hypopygium reddish yellow, on the half above shining black. In other specimens the yellow cross-band of the second segment may be confined to a small spot on each side or wholly wanting, the median stripe of the third and fourth segment wholly wanting, on the fourth only four small anterior spots, those on the anterior angles of the fifth very small, and the hypopygium almost wholly black. Front and middle legs yellow; hind femora black, except the base, in the female less extensive, often only a brown ring; hind tibiæ indistinctly biannulate with brown; and the hind tarsi brownish. Wings nearly hyaline, veins mostly black.

Twelve specimens from California, Washington Territory, and Connecticut.

Mesograpta aurulenta, n. sp.

Habitat.—San Domingo!

♂. Length, 5.5mm. Face and frontal triangle light translucent yellow; cheeks narrowly shining black, behind and on the posterior orbits with a greenish tinge, covered with light yellowish pollen. Eyes briefly contiguous; vertical triangle black, elongate; ocelli remote from the vertex. Antennæ yellow; somewhat blackish above. Lateral stripes of tho-

rax entire, yellow; dorsum black, but little shining, with three olivaceous stripes, separated by about their own width; pleuræ shining black, an elongate spot on the mesopleuræ, and an oval one below it, yellowish. Scutellum black, with a narrow yellow border. Abdomen yellowish red, or reddish yellow, with a bright golden-yellow metallic reflection; first segment more brownish. Legs reddish yellow; front femora with a small black spot above near the base; middle femora with a larger spot in the same place, and the last two joints of the tarsi black; hind femora with two incomplete black rings, one basal and one preapical; hind tibiæ also with two narrow black rings; hind metatarsi brownish, and the last two joints of tarsi black; hind femora thickened. Wings lightly tinged with dark; third vein gently sinuate.

♀. Front shining black, narrowly yellow on the sides. Abdomen yellowish red, but little shining; the first segment on the sides, a small spot in the middle of the second segment behind, and a minute one on each of the following segments, all sometimes obsolete, black; second, third, and fourth segments with narrow hind margins, and the fifth segment wholly, shining metallic golden, as in the male. Front much narrowed above; face with a broad median black stripe.

Four specimens (two ♂ and two ♀), San Domingo (G. F. Frazar).

Mesograpta Boscii.

Syrphus Boscii Macquart, Dipt Exot., ii, 2, 100, 23; pl. xvii, fig. 2.
Syrphus Gurges Walker, Dipt. Saunders, 236 (Osten Sacken).

Habitat.—Carolina (Macq.), Alabama, Florida (O. S.).

♀. Length, 5^{mm}. Thorace nigro, lateribus flavis; scutello nigro, rufo-marginato. Abdomine rufo, nigro variegato. Femoribus posticis annulo fusco. Face courte, proéminente, jaune; côtés à duvet blanchâtre. Front d'un noir bleuâtre luisant, bordé de fauve. Antennes fauves. Abdomen ovalaire alongé; premier segment noir; deuxième à moitié antérieure fauve, postérieure noire; troisième et quatrième fauves, à bande dorsale noire, renflée, arrondie vers le bord antérieur et divisée par une ligne fauve, élargie au bord postérieur; ce bord noir, émettant deux rameaux triangulaires de chaque côté; cinquième fauve, à trois lignes noires, longitudinales. Pieds jaunes; cuisses postérieures à anneau brun près de l'extrémité; jambes postérieures à deux anneaux brunâtres peu distincts. Ailes un peu jaunâtres; cellule basilaire externe s'étendant jusqu'au tiers de la discoïdale.—Macquart.

Thorax black, the sides yellow; scutellum black, margined with yellow. Abdomen red, variegated with black. Hind femora with a brown ring. Face short, prominent, yellow; the sides white dusted. Front shining bluish black, yellow on the sides. Antennæ luteous. Abdomen elongate oval; first segment black; second on the anterior half luteous, posterior half black; third and fourth luteous, with a black stripe, dilated, rounded near the front border and divided by a luteous line, enlarged at the hind border, the hind border black, emit-

ting two triangular branches on each side; fifth luteous, with three black linear stripes. Legs yellow; hind femora with a brown ring near the tip; hind tibiæ with two indistinct brown rings. Wings a little yellowish.—Translation.

ADDITIONAL NORTH AMERICAN SPECIES.

Mesograpta anchorata Osten Sacken, Cat. Dipt., 125.
Syrphus anchoratus Macquart, Dipt. Exot., ii, 2, 97; tab. xvi, fig. 8.
Mesograpta arcifera Loew, Centur., vi, 52.—Cuba.
Mesograpta basilaris v. d. Wulp, Tijdschr. v. Entom., xxvi.—Guadeloupe.
Syrphus basilaris Wiedemann, Auss. Zw. Ins., ii, 143, 48.
Mesograpta ectypus Osten Sacken, Cat. Dipt., 125.—Cuba.
Syrphus ectypus Say, J. Acad. Phil., vi, 165, 3; Compl. Wr., ii, 359.
Mesograpta laciniosa Loew, Centur., vi, 50.—Cuba.
Mesograpta linearis v. d. Wulp, Tijdschr. v. Entom., xxvi.—Mexico.
Mesograpta minuta Osten Sacken, Cat. Dipt., 125.—Cuba.
Syrphus minutus Wiedemann, Auss. Zw. Ins. ii, 146, Brazil; Bigot in R. de la Sagra, etc., 806.
Mesograpta multipunctata v. d. Wulp, Tijdschr. v. Entom., xxvi.—Guadeloupe.
Mesograpta poecilogastra Loew, Centur., vi, 51.—Cuba.
Mesograpta pulchella Osten Sacken, Cat. Dipt., 125.
Syrphus pulchellus Macquart, Dipt. Exot. 1er Suppl., 138, 36; tab. xi, fig. 12.
Mesograpta subannulata Loew, Centur., vi, 48.—Cuba.
Mesograpta variabilis v. d. Wulp, Tijdschr. v. Entom., xxvi.—Guadeloupe.

SPHÆROPHORIA.*

Sphærophoria St. Fargeau and Serville, Encycl. Meth., x, 513, 1825; Macquart, Dipt. du Nord, 1829.
Melithreptus Loew, Oken's Isis, 1840, 573.

Slender, small species, of a black or metallic green color, with yellow abdominal bands and yellow lateral stripes on the thorax. Antennæ short, a little remote at their base, third joint oval, arista dorsal, bare, or slightly pubescent. Face below somewhat projecting, lightly tuberculate, yellow, with or without a median black stripe. Eyes bare, contiguous in the male; ocelli remote from the vertex. Thorax with yellow, interrupted or entire, lateral stripes. Scutellum yellow. Abdomen slender, elongate, pointed at the tip in the female, clubbed with projecting hypopygium in the male (except *S. micrura*). Legs slender, simple. Wings in the male often shorter than the abdomen; neuration as in Syrphus. Type of genus, *S. scripta* Linné.

This genus is a very difficult one, and I have not attempted its thorough solution, which must be left to the monographer with an abundance of material at his disposal. In Europe much uncertainty yet prevails as to the specific characters.

* Σφαιρος, sphere; φορά, bearing.

TABLE OF SPECIES.

1.—Hypopygium very small; coxæ and base of femora black . . . . . **micrura**
Hypopygium large 2
2.—Coxæ and base of femora blackish . . . . . **melanosa**
Coxæ or at least femora not blackish (♂) 3
3.—Hypopygium with a tuft of yellow pile below the globular part in front, **cylindrica**
Hypopygium without such a tuft, base . . . . . **sulphuripes**

For other species see descriptions.

Sphærophoria cylindrica. (Plate IV, figs. 16, 16*a*.)

Syrphus cylindricus Say, Amer. Ent., i, pl. xi; Compl. Wr., i, 22; Wiedemann, Auss. Zw. Ins., ii, 138, 38.

Sphœrophoria contigua Macquart, Dipt. Exot., 2e Suppl., 62, 4.

Habitat.—New England, Washington Territory!

♂. Length, 8mm. Face and front light yellow, shining; tubercle and anterior oral margin somewhat fuscous. Antennæ reddish yellow, brownish above on third joint. Dorsum of thorax dark greenish olivaceous, somewhat shining, with an abbreviated lateral yellow stripe; pleuræ deep shining, somewhat bluish black, with light yellow spots, scutellum sulphur yellow. Abdomen slender; first segment black; second segment opaque black in front, with a broad yellow cross-band in the middle, opaque brown or black behind; third segment narrowly brown or blackish in front and behind, elsewhere reddish yellow; fourth segment yellow and obscurely brownish; fifth segment and hypopygium, wholly reddish yellow, the latter globose and with a tuft of pile below in front. Legs yellow, including the coxæ. Wings nearly hyaline, not exceeding the abdomen.

This description applies nearly to typical specimens, but there is much variation, how much of which is varietal and how much specific I cannot say. The following are some of the differences I have observed:

(*a*) ♂. Larger (10mm), abdomen slender, banded, more blackish; yellow lateral stripes of thorax entire. New England, Washington Territory.

(*b*) ♂. Smaller (6mm), abdomen more blackish, coxæ black, base of femora blackish.

(*c*) ♀. Front shining black, yellow on the sides below; yellow lateral stripes of thorax entire. Abdomen moderately broad, shining black with three moderately arcuate, slender, entire bands, reaching the lateral margins; fifth segment with an interrupted band; coxæ and legs yellow; face yellow. New England.

(*d*) ♀. Face with an elongate, oval, shining black spot; lateral thoracic stripes abbreviated at the suture; abdomen slender, black, with three yellow bands, narrowly opaque in front and behind these; fifth segment with a yellow hind margin. New England.

Sphærophoria sulphuripes.

Syrphus sulphuripes Thomson, Eugenies Resa, 501.
Sphærophoria sulphuripes Osten Sacken, West. Dipt., 330.

Habitat.—California!

♂. Length, 8 to 9mm. Face and front livid yellow; cheeks brown behind. Antennæ yellow, third joint brownish above. Thorax olivaceous black, but little metallic; ante-sutural lateral stripes broad; scutellum light ochraceous yellow, with light pile; pleuræ shining black, somewhat bluish, with light yellow spots. Abdomen black, with three yellow or orange bands, slightly arcuate, entire; in front of and behind each yellow band, more broadly on the second segment, opaque black; elsewhere the abdomen is shining, more or less metallic; fifth segment with two red or orange spots; hypopygium yellow or red, more or less blackish behind. Legs, including the coxæ, yellow; the tarsi, especially the hind pair, ochraceous. Wings nearly hyaline; a little exceeding the tip of the abdomen.

Two specimens, Southern California. With these there are others, which probably belong to the same species, differing in the abdominal bands being broader, the color less black and less opaque, and the fourth and fifth segments reddish with brownish marks.

Sphærophoria melanosa, n. sp.

Habitat.—California!

♂. Length, 8mm. Front and face light, livid, greenish-yellow, the facial tubercle fuscous, and the oral margin in front narrowly brownish. Cheeks metallic greenish black behind; antennæ reddish-yellow; third joint brown above. Dorsum of thorax metallic greenish-black; the ante-sutural yellow stripes not very broad; pleuræ deep, shining black, somewhat bluish, with light yellow spots. Abdomen opaque black; first segment, very narrow hind margin of the second, broader hind margin of the third and fourth, and the fifth segment, except a median spot, shining metallic; first segment with a narrow, narrowly interrupted, yellow band; third with a broader entire one, not reaching to the lateral margins; fourth with two narrowly separated spots in front; fifth with two smaller ones. Hypopygium globular, not pilose, red, black behind. Coxæ black, the hind pair with a yellow spot behind; femora blackish on the basal half, distal portion and tibiæ yellow and luteous; tarsi brown. Wings nearly hyaline, slightly exceeding the abdomen in length.

♀. Front deeply shining black, narrowly yellow on the sides to near the middle. Abdomen moderately shining, black; second, third, and fourth segments each with a slender, gently arcuate, yellow cross-band, attaining the lateral margins; the first one very narrowly interrupted in the middle. Legs, including all the coxæ, light yellow; the tarsi, especially the hind pair, ochraceous.

This description is from two specimens, sent me by Mr. Coquillett, pinned together and bearing a label, "Taken in coitu." The great difference in the legs would have furnished good grounds for believing the specimens to be specifically distinct, had they not been taken together.

With these two specimens were several others, all males, agreeing closely, except that the metallic color of the abdomen is more extensive. Two other males have the spots on the fourth segment coalescent and the femora less black toward the base. One male has the face distinctly blackish on the tubercle and oral margin; the abdomen deep black, with the three narrow cross-bands all interrupted; the femora almost wholly black; and the tibiæ and tarsi much darker than the male first described; the hypopygium also in large part black. Another male differs from the first only in the bands being narrower and all interrupted. All these differences are probably only individual. Other males resembling these, but with the hind coxæ and the legs wholly yellow, may be specifically different.

Sphærophoria micrura.

Sphærophoria micrura Osten Sacken, West. Dipt., 330.

Habitat.—California!

♂. Length, 7.5 to 9mm. Face light yellow, often with a greenish tinge, with a brown or blackish stripe not reaching the antennæ; cheeks metallic greenish black behind, frontal triangle with a large shield-shaped, greenish metallic or shining black spot; the interval between the spot and the eyes is yellow, and yellow pollinose, antennæ red or reddish brown; the third joint blackish above, below red. Thorax dark metallic green, the yellow lateral stripes only reaching the suture; scutellum yellow, with black pile; pleuræ dark metallic, somewhat bluish, without light yellow spots. Abdomen black; first segment yellow on the anterior angles; second, third and fourth segments each with a straight yellow cross band near the middle and attaining the lateral margins, in front and behind with an opaque black cross band; the hind margins shining bluish black; that on the second segment is the narrowest and sometimes narrowly interrupted; fifth segment with yellow sides and two yellow streaks in the middle. Hypopygium black, very small. Legs dark brown or black; the ends of the four front femora more or less brownish-yellow. Wings with a brownish tinge.

Four specimens, Southern California.

Sphærophoria scripta.

Musca scripta Linné, Fauna Suec., p. 1820.

Conops gemmatus Scopoli, Entom. Carniolica, 965.

Syrphus scriptus Fabricius, Spec. Ins., ii, 434, 62; id., Ent. Syst., iv, 308, 113; Meigen, Syst. Beschr., iii, 324, 73.

Scæva scripta Fabricius, Syst. Antl., 252, 17.

Sphærophoria scripta Macquart, Hist. Nat. Dipt., i, 551, 1; Zetterstedt, Dipt. Scand., ii, 766, 1; Walker, List, etc., iii, 593.

Melithreptus scriptus Schiner, Fauna Austr., i, 316; v. d. Wulp, Tijdschr. v. Entom., xxvi.

Habitat.—Canada (v. d. Wulp), Europe.

♂. Length, 10 to 12mm. Abdomen of the male extending beyond the wings, the first yellow band contiguous with the lateral margins. Yellow bands distinctly limited only on the front part of the abdomen; on

the posterior part the black ground color almost wholly obsolete, or for the greater part changed into a brownish color, in which variously formed vittulæ and spots appear. Thorax dark metallic green, feebly shining, with three, often indistinct, longitudinal black stripes, and yellow, entire, lateral stripes; scutellum yellow. Abdominal bands in front and behind somewhat emarginate (ausgerandet), the first and fourth sometimes interrupted by a black line. Face whitish yellow, with a mother-of-pearl lustre; front yellow; antennæ reddish-yellow, at the tip sometimes brownish. Legs reddish-yellow, tarsi somewhat darker; hind tibiæ on the distal half thickly beset below with short, blackish bristles. Wings hyaline, scarcely tinged with brownish-yellow.

♀. Front yellow, the vertex black, extended as a median stripe nearly to the antennæ. Abdomen broad and wholly black, with four yellow bands, the first usually interrupted, the following ones emarginate behind, the fourth broadly interrupted.—Schiner, l. c., translation.

The species is a very variable one, and very common throughout Europe. I give it on the authority of Mr. v. d. Wulp. I have not identified it with any certainty myself, the specimens designated by *a* under *S. cylindrica* approaching it most closely, but differing in the abdominal bands being neither emarginate nor interrupted.

Sphærophoria dubia.

Sphærophoria dubia Bigot, Ann. Soc. Ent. Fr., 1884, 101.

Habitat.—California.

♂. Long. 7^{mm}. Antennis testaceis, apice infuscatis, fronte et facie pallidissimè flavis; thorace nigro, parum æneascente; calyptris et halteribus testaceis; abdomine fulvo, basi latè, vittis tribus transversis latis, lineâ segmenti quinti intermediâ, brevi, maculis duo, utrinque, lunulatis, oppositis, sexti maculis simillimis, nigris; pedibus flavis, tarsis flavo obscuro tinctis.

Antennes d'un fauve pâle, bords supérieurs et chète, bruns; face et front entièrement d'un blanc jaunâtre; thorax d'un noir un peu bronzé; cuillerons et balanciers testacés; abdomen fauve avec la base largement noire, incisions des 2^{e} et 3^{e} segments, bords du 4^{e}, couverts par trois larges bandes transversales, noires, 5^{e} avec une bande dorsale et deux macules en forme de croissant, opposées par leurs pointes, 6^{e} avec deux macules semblables, le tout de couleur noire; pieds d'un jaune assez pâle, tarses d'un brun clair, un peu roussâtre. Ailes ne dépassant pas l'abdomen; face saillante, obtuse, calleuse; antennes, 3^{e} segment presque orbiculaire. 1 specim.—Bigot, l. c.

Sphærophoria pyrrhina.

Sphærophoria pyrrhina Bigot, Ann. Soc. Ent. Fr., 1884, 101.

Habitat.—California.

♂. Long. 6^{mm}. Antennis fulvis, apice fuscis; facie flavâ, callositate fulvâ; thorace æneascente; calyptris ferè albis, halteribus flavis; abdomine

fulvo, segmento 1° nigro, lineâ intermediâ vittisque transversis tribus, tertiâ interruptâ, maculis segmentorum quartis et quintis, utrinque, nigris; pedibus pallidè testaceis, tibiis posticorum basi, tarsisque totis, pallidè rufis.

Antennes fauves, extrémité du 3e segment et chète, noirâtres; face d'un jaune blanchâtre, médians d'un fauve luisant; front jaune; thorax bronzé; abdomen d'un fauve rougeâtre, 1er segment noir, une ligne médiane interrompue, élargie vers les incisions, au 6e segment, trois larges bandes transversales situées sur lesdites incisions, la 3e doublement interrompue, deux points arrondis, de chaque côté, sur le 5e, et quatre macules irrégulières sur le 6e segment, noirs; cuillerons blanchâtres, balanciers jaunes. Ailes ne dépassant pas l'abdomen; face saillante, obtuse, calleuse; antennes, 3e segment orbiculaire. 1 specim.—Bigot, l. c.

Sphærophoria infumata.

Syrphus infumatus Thomson, Eugenies Resa, 501.

Habitat.—California (Thomson).

Æneo-niger, epistomate, pectoris maculis lineaque frontali utrinque albido-margarita-ceis, antennis, vitta laterali abbreviata thoracis, scutello, pedibus fasciisque abdominis flavis, alis leviter infumatis. ♂ ♀. Long. 5–6mm.

Præcedenti [*S. sulphuripes*] simillimus sed parum æneo-micans, antennis articulo 3° ovali-rotundato, linea media impressa frontali obsoleta, gula æneo-fusca, alis leviter infumatis, abdomine fascia 1a integra, coxis anterioribus nigricantibus, apice flavis distinctus.

Mas differt coxis omnibus fusco-nigris, apice pallidis, abdomine segmentis 4–6 rubris, signaturis fusco-æneis vix ullis.—Thomson, l. c.

ADDITIONAL NORTH AMERICAN SPECIES.

Sphærophoria fulvicauda Bigot, Ann. Soc. Ent. Fr., 1884, 104.—Mexico.

Sphærophoria nasuta Bigot, Ann. Soc. Ent. Fr., 1884, 103.—Mexico.

Sphærophoria pachypyga Bigot, Ann. Soc. Ent. Fr., 1884, 104.—Mexico.

Sphærophoria picta Macquart, Hist. Nat. Dipt., i, 553, 8; Zetterstedt, Dipt. Scand., ii, 772; viii, 3161, 7; Holmgren, Ins. Nordgroenl., 100.—Greenland.

Syrphus pictus Meigen, Syst. Beschr., iii, 326, 77.

Melithreptus pictus Schiner, Fauna Austriaca, i, 317.

Sphærophoria picticauda Bigot, Ann. Soc. Ent. Fr., 1884, 102.—Mexico.

Sphærophoria strigata Stäger, Groenl. Antl., 362, 31; Holmgren, Ins. Nordgroenl., 100.—Greenland.

Sphærophoria hieroglyphica Meigen, Syst. Beschr., iii, 327, 78.

Sphærophoria menthastri Linné, Meigen, Syst. Beschr., iii, 325, 75.

Walker, List, etc., iii, 593, mentions these European species as occurring in Nova Scotia, but his statement is of little value without confirmation.

PELECOCERA.*

Pelecocera Meigen, Syst. Beschr., iii, 340, 1822.
Euceratomyia Williston (non Bigot), Wiener Entom. Zeit., iii, 185, 1884.

Small, nearly bare, black species, the sides of the face, and the abdomen, with yellowish markings. Head broader than the thorax; front of the male very broad, not narrowed above. Eyes bare. Face bare, lightly concave above, moderately produced downward, and with a large convex gibbosity below. Antennæ large, first two joints very short, third joint very much elongated, compressed, strongly dilated below at the base, the terminal portion slender, cylindrical, ending in a short, thickened, two-jointed, pubescent style. Abdomen of nearly equal width, depressed, about as broad as the thorax; hypopygium small. Feet simple, the femora not thickened. Marginal cell of wings open, third longitudinal vein gently convex in front; anterior cross-vein near base of discal cell, rectangular. Type of genus *P. tricincta* Meigen, Europe.

This definition is drawn from specimens of *P. Pergandei*, but it only requires slight modifications to adapt it to the four other known, European species, specimens of two of which (*P. latifrons* Loew and *P. scaevoides* Fall.) I have compared, through the kindness of Professor Mik. In *P. latifrons* the structure of the antennæ is very nearly like what it appears to be in the female of *P. Pergandei*, except that the style is much more slender; the face is also more protuberant below. *P. scaevoides* differs distinctly in the third joint of the antennæ being more oval, and in the style being more slender and dorsal, not terminal. *P. Pergandei* is thus nearest allied to *P. latifrons* of any of the described species, and cannot be separated. The genus I first described as *Euceratomyia*, overlooking *Pelecocera*, and it was not till I casually read the description of Loew's species that I recognized the relationship of my specimen. Mr. Bigot's determination of the species, from my descriptions, as a member of the genus *Merapioides* is of course wholly inadmissible.

Pelecocera Pergandei. (Plate IV, fig. 13.)

Euceratomyia Pergandei Williston, Wien. Ent. Zeit., iii, p. 186, fig.
Merapioides Pergandei Bigot, Wien. Ent. Zeit., iii, 217.
Pelecocera Pergandei Williston, Bull. Brooklyn Ent. Soc., vii, 139.

Habitat.—District of Columbia!

♂. **Length, 7mm.** Head black; face yellow, with a broad median stripe, narrowed somewhat above, and the cheeks, shining black; antennæ reddish yellow, the upper border and the tip of the third joint and blackish. Front shining black, very broad, lightly grooved Thorax shining greenish black, on the humeri a , extending back nearly to the root of the wings. roader than the thorax, a little broader at the tip

*Πέλεκυς, an axe; κέρας, horn.

of the third segment; black, except the fifth segment and the hypopygium, but slightly shining; second segment across the middle with two coalescent transverse spots; the third and fourth segments on the basal half reddish or brownish yellow. Coxæ and legs yellow, the four front femora and tibiæ in the middle yellowish brown, the hind legs, with the exception of the base and extreme tip of the femora, black. Pile of the whole body short, soft, and sparse. Wings hyaline, the outer part cinereous; stigma brownish yellowish.

One specimen, District of Columbia (Theo. Pergande).

A female discovered with the last, which I have since examined, has the second abdominal segment with a broad median band, the third segment, except the narrow hind margin, and the anterior two-thirds of the fourth segment, all pure yellowish red. The abdomen is of nearly equal width throughout, scarcely at all wider than the thorax. The third joint of the antennæ does not appear to be produced into a cylindrical process, but the projection, which is as long as in the male, seems to be wholly composed of the style.

NEOASCIA, NOM. NOV.*

Ascia Meigen (non Scopoli), Syst. Beschr., iii, 185, 1822.

Small, slender, nearly bare species, black or metallic green, with or without reddish or yellow on the abdomen. Antennæ shorter than the head; third joint oval or obtusely pointed; arista near the middle of the joint, bare. Face black, even, without tubercle, conically produced downward and forward, so that the profile is gently and evenly concave from base of antennæ to oral margin. Eyes bare, separated by the front, which is rather broad in the female, narrower in the male. Abdomen about twice as long as the thorax; second segment narrow, widened posteriorly; third and fourth broad and arched; in outline short club-shaped. Front and middle legs slender, hind femora very much thickened and with a row of short spines below; hind tibiæ bent. Marginal cell of wings open; anterior cross-vein before the middle of the discal cell; the last section of the fourth vein joins the third in a right angle, the anterior angle of discal cell also a right angle; third longitudinal vein straight.

Neoascia globosa. (Plate IV, figs. 10, 10*a*.)

Ascia globosa Walker, List, etc., iii, 546.
Ascia metallica Williston, Proc. Am. Phil. Soc., xx, 315.
Ascia nasuta Bigot, Annales Soc. Ent. de France, 1883, 327.
Ascia quadrinotata Bigot, ibid.
Ascia albipes Bigot, ibid., p. 328.

Habitat.—New England, Oregon!

♀. Length, 3½ to 5mm. Front bronze black, shining, delicately roughened. Face with a bluish reflection, lightly covered with whitish

*Νέος, new; *ascia*, a mason's trowel.

pollen. Antennæ blackish, third joint on the lower part red. Thorax metallic greenish bronze, moderately shining, lightly roughened. Abdomen lightly punctulate, wholly black, moderately shining. Legs yellow; front and middle femora black, except base and tip, the hind femora except the base; hind tibiæ with a ring beyond the middle blackish; and first and last joints of hind tarsi black. Wings nearly hyaline, stigma dilutely yellow.

A single female specimen from Connecticut agrees with Walker's description, and may therefore be considered typical. The species, however, either varies remarkably in its abdomen and legs, or there are a number of closely allied species; being unable to decide this from the material I have, I will describe the different varieties.

First var., *albipes* Bigot, ♂, ♀. Abdomen with two complete reddish yellow bands, front and middle legs wholly yellow; in the male the hind tibiæ chiefly black, bands sometimes interrupted, fourth segment and hypopygium bronze metallic. Seven specimens, Connecticut.

Second var., ♀. Legs as in preceding, abdomen wholly black. Two specimens, Connecticut.

Third var., ♂. Abdomen with two interrupted bands, front and middle femora and tibiæ with a black ring. Two specimens, Connecticut.

Fourth var., *metallica*, ♀. Abdomen wholly black, or third segment with two small spots. Legs black, base and tip of tibiæ and tarsi yellow, tarsi otherwise brownish. Two specimens, Oregon.

One male from the last place has the base and tips of femora and tarsi more broadly yellow, and the abdomen with two bands (var. *nasuta?*). In these last three specimens the third joint of the antennæ seems to be shorter and more rounded at the extremity than in the Eastern specimens. Possibly they may be entitled to specific rank, but I strongly suspect that all these differences are but varieties of one widely distributed species.

The species described by Bigot as *nasuta* has a broad band on the second and third segments, the latter one sometimes divided in the middle. The legs are yellow, the femora black towards the base (the hind pair, except the tip), the tibiæ with a broad ring of the same color, the front tarsi with the first and last joint, the middle pair with the last joint, and the hind pair with the under side of all the joints largely, black. The specimens were from Mt. Hood. *A. quadrinotata*, from the same place, differs chiefly in there being four spots on the abdomen, and was suspected by its author of being a variety of the preceding. Should the differences in the antennæ (as above stated) indicate a different species, it would be entitled to the name *metallica*, of which Bigot's names would indicate varieties.

Neoascia distincta, n. sp.

Habitat.—Massachusetts!

♀. Length, 4 mm. Deep metallic green, shining. Front finely roughened; face whitish pollinose. Antennæ red, brownish on the upper

border. Abdomen only a little narrowed toward the base. Legs yellow; front and middle femora toward the base, and a ring on hind tibiæ, blackish; hind femora, except the base, black. Wings nearly hyaline; stigma pale yellow; a minute stump of a vein on the outer cross-veins.

Two specimens, Beverly, Massachusetts, May 8 (E. Burgess, National Museum, Professor Riley's collection). This pretty species is very distinct from *N. globosa*, in the larger, more elongate antennæ, in the less produced epistoma, in the less spatulate, broader at the base, and more pointed abdomen, and in the nearly uniform bright metallic color.

SPHEGINA.

Sphegina Meigen, Syst. Beschr., iii, 193, 1822.

Small, nearly bare, slender species, black, brown, or yellow, more or less shining. Antennæ short, third joint rounded, the arista bare, basal. Face deeply concave in profile below the antennæ, the epistoma porrected, not descending below the eyes. Eyes bare, separate in the male; front of equal width, broader in the female. Abdomen twice or thrice as long as the thorax; at the base in the male pedicellate—in the female much contracted, but not so slender; third and fourth segments expanded, especially in the female, and convex above. Legs slender; hind femora much thickened, with short spines below; hind metatarsi thickened. Wings long and broad; marginal cell open, third vein straight, anterior outer angle of first posterior cell rectangular or acute; anterior cross-vein before the middle of discal cell. Type of genus, *S. clunipes* Fallen, Europe.

TABLE OF SPECIES.

1. Wings large; abdomen short; front in female nearly as broad as long. **infuscata**
   Front in female much longer than broad 2
2. Fifth abdominal segment in female considerably broader than long . . **lobata**
   Fifth segment in female but little broader than long 3
3. Thorax more or less black . . . . . **rufiventris**
   Thorax not at all black (♀) . . . . . **Keeniana**

Sphegina Keeniana, n. sp. (Plate IV, fig. 11.)

Habitat.—Pennsylvania!

♀. Length, 5 to 6^{mm}. Front black, thickly dusted on the sides, leaving a slender, shining stripe, interrupted in the middle. Antennæ yellow, third joint rather large, orbicular. Face light yellow, blackish in the middle above; cheeks and occiput black, lightly dusted. Thorax yellow; the dorsum and scutellum darker, with a reddish cast; the lower part of the pleuræ behind, brown. Abdomen yellow, broad behind; first segment behind, obscure spots on the sides of the second segment in front, and small spots on the posterior angles of the fourth and fifth segments, blackish; second and third segments on the posterior part with a rather narrow, black cross-band; fifth segment moderately

broader than long. Coxæ and legs white; a broad preapical ring on the hind femora, hind metatarsi, and the last two joints of all the tarsi, black; two small, incomplete rings on the hind tibiæ, blackish. Wings hyaline.

♂. Thorax blackish above, sometimes wholly black except the humeri and below them. Abdomen of moderate length, sometimes nearly black, except the basal part of the third segment, the fourth segment always more brown than in the female; front and middle tibiæ sometimes faintly brownish near their middle.

This species differs from *lobata*, to which it is most nearly allied, besides the coloration, in the anterior distal angle of the first posterior cell being more acute, and the abdomen of the male being very much less slender. Four female and three male specimens, captured by Mr. Eugene L. Keen, in Fairmount Park, Philadelphia, May 21. The black markings, in both male and female, vary much in intensity on the abdomen.

Sphegina infuscata. (Plate IV; fig. 12.)

Sphegina infuscata Loew, Centur., iii, 23.

Habitat.—Sitka (Loew), Oregon!

♂, ♀. Length, 5 to 6¼mm, of wings 6¼ to 6⅔mm. Head black, opaque; front of male narrower than that of female, and clothed with longer, black pile. Antennæ black. Thorax fuscous black; the dorsum with delicate pile, longer and more obscure in the male than in the female. Scutellum and metanotum of the same color as the thorax. Abdomen shorter than in the species indigenous to Europe, and attenuate near the base, in the male fuscous, in the female reddish testaceous. Legs of the male fuscous, of the female reddish testaceous. Wings large, dilutely infuscate; stigma elongate, fuscous, apical angle of first posterior cell acute.—Translation from Loew, compared with the types.

A single specimen from Mount Hood, Oregon, probably belongs to this species, most especially characterized by the short abdomen, the large wings, and acute posterior cell. The specimen, a female, however, has the abdomen and legs wholly light-yellow, and thorax more brown than black; it may be teneral.

Sphegina rufiventris.

Sphegina rufiventris Loew, Centur., iii, 22.

Habitat.—New York (Lw.), Washington Territory!

♀. Length, 6½mm. A very variable species. Red. Dorsum of thorax, except the humeri and posterior angles, always black, sometimes the thorax almost wholly black. Front black, of equal width. Face yellowish, above somewhat blackish. Occiput black. Third joint of the antennæ fuscous or black. Scutellum sometimes red, often piceous, rarely black. Abdomen red, shining; base often black, distal half less broad than in *S. lobata*. Front and middle legs yellowish, last two joints

of the tarsi black; posterior legs brownish-red, femora and tibiæ yellow at the base, tip of tibiæ and tarsi fuscous-black, the intermediate tarsal joints often less deeply so. Wings subhyaline, or subfuscous towards the tip; apical angle of first posterior cell rectangular.

From *S. lobata* this species differs, besides the color of the body, in the last segment of the abdomen being less broad, and the hind femora less incrassate.—Translation from Loew, compared with the type.

A single female specimen from Washington Territory agrees perfectly with this description, except that I do not see that the hind femora are less incrassate than in *S. lobata*. The third joint of the antennæ, the thorax wholly, and the base of the abdomen are black.

Sphegina lobata.

Sphegina lobata Loew, Centur., iii, 21.

Habitat.—White Mountains, New Hampshire, Oregon!, Middle States (Lw.)

Length, 6½mm. Male. Head black. Face nearly wholly white. Eyes separate; front of equal width; antennæ luteous, arista sub-fuscous. Thorax shining black; humeri and lateral spots of the dorsum testaceous. Scutellum and abdomen black, shining; basal fascia of the third abdominal segment yellow; anterior angles and posterior margin of the fourth segment testaceous. Hypopygium globose, black. Left angle of the last ventral segment produced into a large fuscous testaceous lobe. Coxæ and feet, whitish; distal half of the hind femora, except the extreme tip, black; basal half of hind tibiæ fuscous; distal portion imperfectly black annulate. Last two joints of the front, and the first and last two of the hind tarsi, black—the intermediate ones subfuscous. Wings subfuscous, stigma a little more obscure; apical angle of the first posterior cell a right one.

Female. Very similar to the male. Front a little broader. Distal half of abdomen strongly dilated, the third and fourth segments with two spots, large, testaceous, subobsolete; fifth segment sordid white. Last two joints of the four front tarsi blackish; hind tarsi black, intermediate joints a little less so.—Translation.

Three specimens from Mount Washington, New Hampshire (Dr. George Dimmock, Nos. 1494–7–8), and one male from Mount Hood, Oregon, I have no doubt belong with this species, which is evidently variable. For this reason I have chosen rather to reproduce the original in translation and point out the differences. The female agrees throughout, except that the humeri and interrupted bands of the abdomen are light yellow. The third joint of the antennæ in the males is more blackish than luteous, the face is blackish on the upper part; the reddish color of the humeri and post-alar callus not very apparent in all but one specimen. In the Eastern males the distal half of the second segment of the abdomen (in one specimen the third wholly and the fourth except a darker band in the middle) is red, the hypopygium more black-

ish; in the Western specimen the abdomen is more nearly as Loew described it. In all the male specimens the hind femora are brownish red, not black.

Type specimen in the Loew collection at Cambridge examined.

BACCHA.*

Baccha Fabricius, Syst. Antl., 199, 1805.
Ocyptamus Macquart, Hist. Nat. Dipt., i, 559, 1834.
Bacha Schiner, et auct.

Medium size, bare species, usually with long, slender abdomen, narrowest towards the base, but often shorter and not narrowed at base. Head large and round, broader than the thorax. Antennæ short, third joint rounded or oval; arista toward the base, slender, bare. Eyes bare, contiguous in the male. Front in female long, narrow, often much narrowed above. Face in large part yellowish, nearly straight in profile below the antennæ, or only gently excavated above the tubercle; below the tubercle usually more or less receding; not at all produced below the eyes. Cheeks very narrow, the distance between the eyes below less than the width of the face in the middle. Thorax short, abdomen three or four times as long as the thorax, the second segment very slender, thence gradually widening to tip of fourth segment, the remaining segments gradually or abruptly narrowed. Legs very slender, the hind femora elongate, but not thickened, hind metatarsi elongated and thickened. Wings as in *Syrphus*, the small cross-vein sometimes near the middle of discal cell; often with dark brown or blackish markings. Type of genus, *B. elongata* Fabr., Europe.

TABLE OF SPECIES.

1.—Abdomen distinctly narrowed toward the base; elongate, more or less club-shaped or spatulate 2
Abdomen shorter than the wings; either broadest toward the base, or with parallel sides; not cylindrical or clubbed (*Ocyptamus*) 8
2.—Third joint of the antennæ elongate oval, obtusely pointed; face very prominent . . . . . **Babista**
Third joint short oval, obtusely rounded; face not prominent 3
3.—Wings cinerous hyaline, without distinct dark markings; abdomen very slender . . . . . **cognata, obscuricornis**
Wings more or less brownish or blackish 4
4.—Wings with a broad median cross-band, reaching to the fourth posterior cell 5
Wings with the front border, at least, for its whole length brownish or blackish 6
5.—Scutellum and posterior part of the dorsum shining golden . . . . **aurinota**
Scutellum translucent, yellowish brown, with a metallic reflection . . **lemur**
6.—Posterior half of the wings nearly hyaline . . . . . **Tarohetina**
Wings more or less brown or blackish on the posterior part 7

*Baccha, a mythological name.

7.—Wings subcinerescent; all the veins, except the last segment of the fourth, broadly clouded with blackish, confluent near the costa . . . . **lugens**

Wings with a triangular hyaline space behind the outer end of third vein, the axillary portion more or less subhyaline . . . . . **fuscipennis**

8.—Wings wholly blackish . . . . . **latiuscula**

Wings broadly hyaline from before the tip of first vein to tip of sixth vein, basal part black . . . . . **dimidiata**

Wings nearly hyaline, the immediate base, the costal and subcostal cells and a broad triangular cross-band reaching to the outer part of the sixth vein, dark brown . . . . . **torva**

For other species, see descriptions.

Baccha Tarchetius.

Baccha Tarchetius Walker, List., etc., iii, 549.

Habitat.—New Jersey!.

♂. Length, 10.5mm. Distance from ocelli to base of antennæ considerably greater than thence to oral margin. Frontal triangle black, a little shining, with black pile; large, with a large semicircular grooved space above the base of the antennæ; narrowly whitish pollinose on the sides below, like it is on the face. Basal joints of antennæ yellowish, third joint short oval, brown; arista black. Face yellow, thinly whitish pollinose on the sides, in the middle with a broad shining black stripe, narrowed below the tubercle. Posterior orbits narrowly whitish pollinose. Thorax shining greenish-black, with whitish pile; on the pleuræ a small vertical yellowish spot. Abdomen moderately slender, opaque black; the first segment, the second segment narrowly in front, along the sides and a posterior band, shining metallic green; third segment narrowly in front, a posterior band a little dilated in the middle, and along the sides, more broadly in front, narrowly behind, the same metallic green, on the lateral shining places near the front a small yellow spot; fourth segment similar, the yellow spots larger and the posterior band more dilated in the middle; remainder of the abdomen wholly shining; the second segment is cylindrical, the third much broader behind. Legs yellow; hind femora with a broad ring before the tip, the hind tibiæ, except the base, and the hind metatarsi, blackish. Wings hyaline, with a broad dark-brown anterior border filling out the first posterior cell to a little beyond the cross-vein, thence following, but not exceeding, the third vein to the tip; a small hyaline spot in the marginal cell near the origin of the third vein.

One specimen, from Mr. Keen.

Baccha Babista. (Plate IV, fig. 9.)

Baccha Babista Walker, List, etc., iii, 549 (♂).

Spazigaster bacchoides Bigot, Annales Soc. Ent. de France, 1883, 326.

Habitat.—Georgia, Florida, Arizona, California!

♀. Length, 10 to 11mm. Face considerably projecting below, gently concave below the antennæ, tubercle large, obtuse, not receding below; light yellow, the cheeks, and a narrow line along the oral margin to

connect with the broad facial stripe, shining black. Antennæ reddish brown, third joint elongate-oval. Front only moderately narrowed at the vertex, more than half as wide as at the base of the antennæ, shining greenish black, on the sides below the yellow of the face extends up along the eyes; the distance from the ocelli to the base of the antennæ is considerably less than from thence to oral margin. Eyes very little convergent on lower part of head. Thorax shining greenish blue, pleuræ with white pile. Scutellum yellow, brown or brownish across the disk. Abdomen slender at the second segment, rather broadly spatulate at the distal part; first segment black; second and third segments brownish black, lighter in front; on the sides at the front end yellow and with white pile; fourth segment black, with a yellow, interrupted, white pilose cross-band in front: remainder of abdomen more shining metallic. Legs brownish, tarsi darker, tip of femora and base of tibiæ yellowish. Wings hyaline, brown along the front border from a little beyond the humeral cross-vein, more blackish on the stigma, reaching back in the middle to or beyond the origin of the third vein, and then evanescent outwards, anterior cross-vein near the basal third of discal cell; the third vein joins the costa immediately before the tip.

♂. Frontal triangle yellow, black immediately above the antennæ, the legs somewhat more yellowish, though this is probably not a sexual character. The wings differ distinctly in that the brown is wholly confined to the sub-costal cell, blackish at the stigma.

Two female specimens (Professor Riley) collected by Mr. William Patton, labeled "From spring larvæ among Cotton Aphides, Selma, Ala.," and one from Arizona (Professor Comstock): an additional specimen (Professor Riley) with the label "Pupa found in Orange. R. S. Turner, Saint George, Fla., May 7, '80;" also two male specimens (Professor Riley, No. 82, May 23, '80, Georgia?

The male has the costal and marginal cells hyaline, while in the female they are both in large part brown, yet it seems almost sure that they belong to the same species.

Bacha ingens

[illegible]

Hab. ?—New York (U. S.), Southern States?

♀. Length, 10 mm. Front black bronze, black pilose, above the antennæ yellow spotted. First two joints of the antennæ yellow, black pilose, third joint black. Thorax and the scutellum black-blue, moderately shining, the sides of the scutellum somewhat reddish brown, lower half of pleuræ white-pilose. Abdomen black, [illegible] near the tip, the base and apical margin of each segment shining bluish, the last segment wholly shining, sub-violaceous black. Legs black, front and middle femora except the tip, base of hind femora and of the front and middle tibiæ, yellow or yellowish red. Halteres sordid whitish, head with a black spot. Wings

sub-cinerescent, all the veins, except the last segment of the fourth vein, broadly clouded with black, confluent near the costa. Face yellow, obscure on the sides, with opaque yellowish pollen.—Translation.

Two male specimens from Professor Riley without locality (No. 485, June 2, 1880,) evidently belong to this species. The front, however, lacks the yellow spots above the antennæ. The face in profile is narrow, only a little widened at the tubercle, nearly perpendicular and straight above it, and very receding below, the cheeks linear, and the eyes very convergent below. The meso-pleuræ are whitish pollinose, as well as below. The legs are yellowish, the end of all the femora, the end of front and middle tibiæ, and nearly all of the hind tibiæ, and all of the tarsi, brown. The small cross-vein is a little beyond the middle of the discal cell, and rectangular; the clouding of the wings along the veins, brown.

Baccha fuscipennis. (Plate IV, fig. 8.)

Baccha fuscipennis Say, J., Acad., Phil., iii, 100; Compl. Wr., ii, 86.
Ocyptamus fascipennis Macquart, Hist. Nat. Dipt., i, 554, 2; tab. xii, fig. 13; v. d. Wulp, Tijds. v. Ent., xxvi, 9.
Syrphus Amissus Walker, List, etc., iii, 589.
Syrphus Radaca Walker, List, etc., iii, 590.
Ocyptamus longiventris Loew, Centur., vii, 66.
Ocyptamus fuscipennis Osten Sacken, Cat. Dipt., 127.
? *Ocyptamus conformis* Loew, Centur., vii, 67.

Habitat.—New England, Florida, San Domingo, Kansas,! Guadeloupe (v. d. Wulp).

♂, ♀. Length, 9 to 11mm. Antennæ situated near the middle of the head in profile; black, the first two joints and the third below sometimes reddish or yellowish. Frontal triangle considerably longer than the contiguity of the eyes, wholly bronze-black with black pile; front in the female very narrow at the vertex, greenish-black, attenuated above the antennæ by the yellow of the face, which extends up along the eyes nearly to the middle of the front. Face nearly perpendicular, very gently concave below the antennæ to the tubercle, thence receding to the oral margin; yellow, on the sides whitish; cheeks linear, eyes convergent below. Thorax bronze-black, moderately shining, with two very faint, slender, less shining stripes; scutellum of the same color, not infrequently somewhat reddish. Pleuræ whitish pollinose. Abdomen slender, only a little widened behind, in the male opaque black, sometimes faintly purplish, the first segment and sides of the second to beyond the middle, the narrow hind margin of the second, third, and fourth, and the remainder of the abdomen, shining, somewhat metallic; fifth segment scarcely longer than broad in both sexes; in the female the abdomen is broader throughout, shining reddish, especially on the front part of the second—fifth segments, the posterior portion more brownish or even blackish. Legs yellowish; the tip of the hind femora, and sometimes the tip of the front and middle femora, the tip of front and middle tibiæ, and nearly all of the

hind pair, and all the tarsi, brown; the hind tibiæ and tarsi usually darker, nearly blackish. Wings usually dark brown, more blackish toward the stigma, with a large triangular hyaline spot near the tip, reaching from the third vein to the hind margin as far as the tip of the discal cell; the axillary angle, the anal cell, the larger part of the third posterior cell, and somewhat in the discal cell, lighter brown, sometimes wholly hyaline, with a brown band filling out the end of the discal cell (var. *fascipennis* Macq.), rarely there is a hyaline streak along the middle of the marginal cell; anterior cross-vein near middle of discal cell.

This description is chiefly based upon numerous specimens collected in the vicinity of New Haven, among which the wings vary very much in the color of the posterior border. Other specimens differing scarcely at all from the more typical ones I have from Florida and Kansas. According to Dr. Loew, his *Ocypt. longiventris* differs from *fuscipennis* in the wings being larger and the picture different, but a large number of specimens show that the coloring of the wings is variable, and, in such frail flies, the size of the wings is a doubtful character. It seems to me very probable that *Ocypt. conformis* is also a synonym of this species.

Of the synonymy of *Ocypt. fascipennis* Macq. there can be no doubt, I think. The hyalinity of the wings in extreme examples might indicate the two varieties to be "bestimmt verschieden," as Schiner thought (Novara Exped., 346, 14), but a larger number presents too many intermediate forms.

Baccha aurinota. (Plate IV, fig. 7.)

Baccha aurinota (Harris) Walker, List, etc., iii, 548.

Baccha fuscipennis Wiedemann, Auss. Zw. Ins., ii, 96; v. d. Wulp, Tijdschr. voor. Entom., xxvi.

Habitat.—Connecticut, Massachusetts, Indiana!, New York, Canada.

♂. Length, 10 to 11^{mm}. Face yellow, extending up narrowly on the lower part of the front, more reddish shining in the middle; nearly perpendicular, and gently concave to the tubercle, thence much receding to the oral margin; cheeks extremely narrow, the eyes approaching the oral margin; the distance between the eyes below not two-thirds the width of the face below the antennæ. Antennæ brown, the under side of the third joint reddish yellow. Front very narrow above, separated only by the width of the ocelli at the vertex; shining black, narrowly pollinose along the eyes, above the root of each antenna a reddish yellow spot more or less confluent, leaving a rounded black spot between the roots of the antennæ above. Dorsum of thorax metallic greenish black, with three median, slender, grayish pollinose stripes; pleuræ thickly grayish pollinose and with white pile. Scutellum and the hind part of the thoracic dorsum, in the middle, shining golden. Abdomen slender, black, shining; the front part of the third and fourth segments with small, interrupted, yellowish-red, white pollinose cross-bands; posterior portion of the second, third, fourth segments, and the remainder

of the abdomen, more metallic shining. Wings hyaline, the base to the humeral cross-vein, and a large quadrate spot on the middle, blackish-brown; the spot is more blackish on the stigma, brownish behind, reaching to near the middle of the third posterior cell; the tip of the costal cell is hyaline, and the tip of the sub-costal yellowish. Legs reddish or brownish yellow, the end of hind femora, the most of the hind tibiæ, and all the tarsi, brown.

Two male specimens from Connecticut, that apparently belong to this species, have the face and front metallic green, the tubercle and a lunule above the antennæ, inclosing a small black spot, yellow. They are, moreover, smaller, (9 to 10^{mm}.) and the brown of the wings is much less intense.

The name *B. fascipennis* would have priority were it not so nearly identical with *B. fuscipennis* Say as to render its use highly objectionable.

Baccha lemur.

Baccha lemur Osten Sacken, Western Diptera, 331.

Habitat.—California, Wyoming, New Mexico (O. S.)!

Length, 10 to 11^{mm}. Wings hyaline, with an incomplete cross-band between the stigma and the fourth posterior cell; abdomen with two red cross-bands. Front and vertex metallic greenish black, the former (in the ♀) whitish pruinose along the eyes; face whitish pruinose, its ground color variable, dark metallic green, with more or less brownish yellow on the sides and on the facial tubercle, or entirely yellowish; antennæ brown, or reddish brown, inserted on brownish yellow ground. Thorax metallic greenish black, with vestiges of whitish pruinose stripes anteriorly; pleuræ whitish pruinose, with white pile; scutellum translucent, yellowish brown, with a metallic reflection; halteres with yellow knobs. Abdomen black, shining, with bronze and bluish reflections, a broad, blood-red cross-band, slightly emarginate in the middle posteriorly, at the base of the third and fourth segments; these cross-bands are slightly pruinose; the sides of the abdomen beset with white pile. Legs pale yellow; hind femora and tibiæ usually each with a brownish ring; sometimes the legs are more brownish, especially on the femora. Wings hyaline; the root before the humeral cross-vein and the extreme base of the second basal cells is infuscated, costal cell hyaline, but the interval between auxiliary and first veins is pale brownish; stigma dark brown, the corner between the costa and the end of first vein yellowish; a brown, incomplete cross-band between the first and fifth veins; it coalesces with the brown stigma, leaves hyaline the extreme proximal end of the submarginal cell, covers the small cross-vein and the cross-vein at the base of the discal cell, but reaches only very little beyond either, and ends at the fifth vein, filling up the proximal end of the fourth posterior cell.

Habitat.—Santa Monica, Cal., February 18; Summit Station, Sierra

Nevada, July 17; Fort Bridger, Wyo., August 4; Morino Valley, N. Mex., July 1; W. L. Carpenter. One male and three females.—Osten Sacken, l. c.

Description compared with the type specimen at Cambridge.

Baccha costata.

Baccha costata Say, J. Acad. Phil., vi, 161; Compl. Wr., ii, 357.

Habitat.—Indiana (Say).

"Body black; tergum with white bands; head silvery; a shining black line from the vertex to the mouth, much contracted on the middle of the front. Antennæ obsoletely honey-yellow at base. Occiput plumbeous with a silvery reflection. Thorax black. Poisers white. Wings hyaline with a somewhat narrow costal margin not reaching the tip. Scute margined with yellow. Tergum black; first, second, and third segments with an oblique white spot on each side at base, and remaining segments tipped with yellow-white; feet black; anterior pairs, base of the tibia, and tip of the thighs honey-yellow; posterior tibiæ honey-yellow at base. Length half an inch."—Say, l. c.

Baccha latiuscula.

Ocyptamus latiusculus Loew, Centur., vii, 68.

Habitat.—San Domingo!, Cuba (Lw.).

♂, ♀. Length, 6mm. Black, moderately shining. Front shining blue-black; in the male the frontal triangle large, shining black, narrowly yellow on the sides. Face yellowish white, with a black stripe in the middle, often obsolete. Antennæ black. Abdomen rather broad, depressed, widest at tip of second segment, thence slightly narrowed; in color shining purplish black. Legs black. Wings black, towards the posterior margin less so.

Three male and one female specimens, San Domingo (G. F. Frazar.) One male specimen, which is apparently the same, has the frontal triangle nearly wholly yellow, the antennæ in large part yellowish, a small spot on the humeri and another on the post-alar callus, yellowish red, the scutellum obscurely yellow, the abdomen chiefly opaque black, with a large obscurely reddish-yellow spot on the angle in front of the second and third segments, and the four front legs chiefly luteous. It is apparently an immature specimen. Loew's specimens showed in a less degree similar differences. ("Scutellum æneo-nigrum, vel æneo-piceum. Abdomen media segmentorum singulorum parte purius nigra et magis opaca.") The species differs from *B. dimidiata* chiefly in the wings not being hyaline on the outer part.

Baccha cognata.

Baccha cognata Loew, Centur., iii, 27.

Habitat.—New York (O. S.)!

♀. Length, 7mm. Blackish bronze, head concolorous, the lower half of the face and the antennæ yellow. Humeri and pleuræ yellowish.

Abdomen blackish bronze, basal fasciæ of the third and fourth segments, sometimes also of the fifth, yellow. Wings subhyaline, apical margin and the stigma smoky, the base of the latter black.

Similar to *B. obscuricornis*. Head bronze black, lower half of the face yellow; front, except a median stripe, and face, except the tubercle, thinly clothed with whitish pollen, on the occiput more thickly pollinose. Dorsum of the thorax black bronze, the humeri dilutely yellowish. Pleuræ dilutely yellowish or a little reddish, below obscurely æneseent. Scutellum of the same color as the thorax. Abdomen slender, black bronze, near the tip fuscous bronze: third and fourth segments always, fifth frequently, with a basal yellow fascia. Legs yellow or light reddish, hind femora near the tip, the tibiæ and tarsi nearly wholly, dilutely subfuscous. Wings subhyaline, lightly cinerescent, veins blackish; cross-veins lightly clouded; stigma elongate, smoky, with a basal black spot; apical margin of the wing smoky.

Translation of the original, compared with the type specimen at Cambridge.

Baccha obscuricornis.

Baccha obscuricornis Loew, Centur., iii, 26.
Baccha angusta Osten Sacken, Western Dipt., 332.

Habitat.—Sitka (Lw.), California!

♂ ♀. Length, 7^{mm}. Head bronze black, front nearly wholly, frontal triangle, and the face except the tubercle, thinly white pollinose, the occiput more thickly so. Antennæ wholly brown or black. Dorsum of thorax and scutellum bronze black. Pleuræ very pallidly testaceous, or above yellow and below subfuscous. Abdomen slender, blackish fuscous, somewhat metallic bronze, the base usually bronze black, the third and fourth segments always, the fifth frequently, with a basal yellow fascia. Legs yellow or dilutely testaceous; the hind femora near the tip, the tibiæ, and tarsi almost wholly, subfuscous. Wings subhyaline, lightly cinerescent, veins fuscous black; the transverse veins obsoletely clouded with smoky; stigma elongate, smoky, with a basal black spot; apical margin and the posterior apical half clouded smoky.

Of the synonymy of *B. angusta* there can be no doubt, and its identity with *B. elongata* of Europe seems very probable. I have only an European male for comparison, but I can find no other differences than in the color of the antennæ, which are red. Loew adds to his description: "A Baccha elongata fronte minus æquali et antennis totis atris differt"; but the third joint of the antennæ in my specimens, as in the one which Osten Sacken described, is brown or brownish, so that this difference loses much of its value, and there only remains the difference in the width of the female front. As I have no female specimen of *B. elongata* for comparison, I cannot give any opinion as to the identity of what Loew believed to be two different species.

Baccha torva, n. sp.

Habitat.—Texas!

♀. Length, 9 to 10^{mm}. Cheeks extremely narrow; face wholly yellow. Front very narrow above, shining black, yellow on the sides below; two small, yellow spots just above the base of the antennæ. Antennæ black, third joint oval, thickened. Thorax black; humeri, a spot on the outer end of the suture, the post-alar callosities, and scutellum, yellow or luteous, the latter more brown on the disk. Abdomen elongate, shining brownish black, anterior outer part of the second-fourth segments more luteous; broadest at the tip of the second segment. Legs luteous, the hind pair blackish; hind tarsi, except the last two joints, light yellow. Wings nearly hyaline; the immediate base, the costal and subcostal cells, and a broad triangular cross-band reaching to the outer part of the sixth vein, dark brown.

One specimen, Texas (National Museum, Professor Riley's collection).

Baccha capitata.

Baccha capitata Loew, Centur., iii, 25.

Habitat.—Cuba (Loew)!

♂. Length 12^{mm}. Fuscous-ochraceous, opaque, rather bare. Head, thoracic stripes, spots of the pleuræ, scutellum, and abdominal fasciæ, light yellowish. Hind femora and the hind tibiæ, on their distal half, fuscous. Costa of the wings rather broadly clouded with subfuscous, near the tip fuscous.

Head large, light yellow; frontal lunule fuscous-ochraceous, circumscribed with fuscous. Antennæ obscurely ochraceous. Occiput black, white pollinose, the pollen of the orbits light yellow. Dorsum of the thorax fuscous-ochraceous, opaque, with four light yellow stripes, the intermediate ones posteriorly acute and moderately abbreviated, the lateral ones broadly interrupted. Scutellum light yellow, near the tip usually fuscous-ochraceous. Pleuræ with light yellow spots, variegated with obscure ochraceous and fuscous. First segment of the abdomen yellow, with a fuscous-ochraceous posterior fascia; remainder of the abdomen fuscous-ochraceous, with ochraceous pile, clothed more thickly near the tip of the abdomen; the second segment has at its base a yellowish cross-band; third segment with a rather broad, light-yellow cross-band; fourth at its base with a narrow, saturate-yellow band. Legs ochraceous; hind femora, except the base and tip, and the distal half of the hind tibiæ, fuscous. Wings hyaline, the costal border rather broadly clouded with ochraceous-subfulvous, fuscous near the tip.

Translation from the original, compared with the type.

The stripes of the thorax and bands of the abdomen would be more properly described as light ochraceous. It is a beautiful large species, characterized especially by its general light color.

Baccha dimidiata. (Plate V, fig. 10.)

Syrphus dimidiatus Fabricius, Species Insect., ii, 434, 64; Ent. System., iv, 310, 118; Wiedemann, Auss. Zw. Ins., ii, 140, 42.

Scæva dimidiata Fabricius, Syst. Antl., 254, 25.

Ocyptamus dimidiatus Schiner, Novara Exped., 346; Osten Sacken, Cat. Dipt.

Habitat.—West Indies! Brazil (Schiner).

♀. Length, 6^{mm}. Front shining violet black, very narrow above, with short blackish pile. Antennæ brownish black, third joint subtriangular. Eyes much convergent below. Face yellowish white, obscurely blackish in the middle, and on the oral margin; sometimes wholly yellowish white and extending up on the sides of the front below. Thorax shining brownish black; pleuræ whitish pollinose. Abdomen bare, deep shining, somewhat metallic brown, only a little elongate, not reaching to the tip of the wings, broadest at tip of second segment, thence gently narrowed to the tip of the fifth segment. Venter obscurely brownish yellow. Legs blackish brown. Wings blackish brown on the basal half, hyaline on the outer portion; the border of the brown extends across nearly straight from before the tip of the first longitudinal vein to the tip of the sixth.

Four specimens, San Domingo (G. F. Frazar).

ADDITIONAL NORTH AMERICAN SPECIES.

Baccha clavata Fabricius, Syst. Antl., 200, 3; Wiedemann, Auss. Zw. Ins., ii, 94, 4; Schiner, Novara Exped., 341. S. Am. (Schiner); W. Indies (O. S.).

Syrphus clavatus Fabricius, Ent. Syst., iv, 298, 73.

Baccha cochenillivora Guerin, Rev. Zool., 1848, 350; Bull. Soc. Ent., 1848. **Guatam.**

Baccha conformis.

Ocyptamus conformis Loew, Centur., vii, 67. **Cuba.**

Baccha cubensis Macquart, Dipt. Exot., 4e Suppl., 161, 5. **Cuba.**

Baccha cylindrica Fabricius, Syst. Antl., 199, 2; Wiedemann, A. Z., ii, 92.

Syrphus cylindricus Fabricius, Spec. Insect., ii, 249, 41; Ent. Syst., iv, 298, 74.

Baccha fasciata Röder, Stett. Ent. Zeit., 1885, 342. **Porto Rico.**

Baccha fraterna Bigot, Ann. Soc. Ent. de Fr., 1883, 324 (*Ocyptamus*). **Mexico.**

Baccha funebris.

Ocyptamus funebris Macquart, Hist. Nat. Dipt., i, 554, 1; Dipt. Exot., ii, 105; Bigot in Ramon de la Sagra, etc., 807; Schiner Novara Exped., 346 ("Ob sie mit Macquart's Ocyptamus fascipennis [B. fuscipennis] identisch ist, vermag ich nicht zu entscheiden.")

Baccha infuscata Bigot, Ann. Soc. Ent de Fr., 1883, 324 (*Ocyptamus*). **Mexico.**

Baccha lineata Macquart, Dipt. Exot., 1er suppl., 139, 4; pl. 20, fig. 5. **Yucatan, Texas?**

Baccha luctuosa Bigot, Ann. Soc. Ent. de Fr., 1883, 334. **Mexico.**

Baccha marmorata Bigot, Ann. Soc. Ent. de Fr., 1883, 333. **Mexico.**

Baccha notata Loew, Centur., vii, 65. **Cuba.**

Baccha parvicornis Loew, Wien. Ent. Monats. v, 41; Centur., vii, 64. **Cuba.**

Baccha rufiventris Bigot, Ann. Soc. Ent. de Fr., 1883, 325 (*Ocyptamus*). **Cuba.** [=*B. dimidiata*?]

Baccha scutellata Loew, Centur., vii, 69 (*Ocyptamus*). **Cuba.**

CHALCOMYIA.*

Chalcomyia Williston, Bull. Brooklyn Entom. Soc., vol. vii, p. 133.

Moderate sized, nearly bare, metallic bronze species. Eyes broadly separated in the male. Antennæ situated upon a strong cal projection, especially in the male, first two joints short, third or lar; arista basal, bare. Face in the male gently convex from belo antennal process; in the female concave from the antennæ to the but most so below the middle; face produced but little below the Scutellum large and projecting, nearly square, with the outer a rounded, thinned on the margin, and shallowly grooved on the Abdomen flattened, broadly oval in outline. Legs rather stout; femora moderately thickened; hind tibiæ gently arcuate; hind t tarsi as long as the four following joints, not thickened. Margina of wing open, third longitudinal vein nearly straight, anterior c vein oblique, situated a little before the middle of the discal cell. of genus *C. aerea* Loew, North America.

Chalcomyia aerea. (Plate IV, fig. 14.)

Myiolepta aerea Loew, Centur., x, 53.

Habitat.—Virginia! Illinois (Lw.).

♂, ♀. Length, 6 to 7mm. Greenish bronze-color, shining, clothed short yellow pile. Front of the female with a whitish pollinose cross-b narrowly interrupted; male with a narrow, obsolete cross-band, ex ing narrowly down along the eyes. Margin of the antennal proce the base of the antennæ red. First two joints of the antennæ red brownish, third joint more brownish-reddish, blackish on the upper arista luteous. Face in the female shining black, except a yello pollinose stripe that runs from the eyes obliquely to the oral margi the male the sides of the antennal process and the face below the cess thickly covered with satiny yellowish pubescence, when vi from above, wholly concealing the ground color, and changeable i ferent lights, the under side of the process showing the ground- more distinctly. Anterior margin of the thorax white pollinose. domen more bronze-colored, with yellow pile, longer on the sides in f Legs black, extreme tip of the femora, basal third of the tibiæ, and three joints of the tarsi reddish-yellow; hind femora in the male a l more thickened than in the female and with a slight protuberance b near the base. Wings sublutescent, the veins near the tip and poste margin fuscous.

Two specimens. Virginia (Mr. Theo. Pergande).

* Χαλκος, copper, and μυια, fly.

MYIOLEPTA.*

Myolepta Newman, Ent. Mag., v, 373, 1838.
Xyloteja Rondani, Dipt. Ital. Prodr., ii, 96, 1857.

Moderate sized, bare species, metallic, black, or black-green; on the abdomen and face, sometimes with luteous side spots. Head broad, a little flattened. Antennæ short, situated upon an obtuse conical projection; first two joints short, third rounded or oval, with a basal, bare arista. Face strongly concave in outline below the antennæ, projecting below, in the male with a tubercle near the middle. Eyes bare, contiguous in the male; the front somewhat narrowed behind in the female. Thorax somewhat narrowed in front. Scutellum black, thinned near its border. Abdomen about twice as long as the thorax, and as broad or broader, somewhat flattened, oval or ovate. Legs stout, all the femora somewhat thickened, but more especially so the hind pair. Marginal cell of the wings open; third longitudinal vein nearly straight; anterior cross-vein towards the base of the discal cell.

Type of genus, *M. luteola* Gmelin.

TABLE OF SPECIES.

1.—Face on the sides below with a large luteous spot; third joint of antennæ ovate	**strigilata**
Face without such spot	**2**
2.—Legs wholly black	**bella**
Tarsi and tibiæ more or less yellow	**3**
3.—Abdomen black	**nigra**
Abdomen with luteous or yellow spots at the base	**varipes**

Myiolepta strigilata.

Myiolepta strigilata Loew, Centur., x, 54.

Habitat.—Texas, North Carolina!

♂, ♀. Blackish greenish, moderately shining, wholly clothed with short, rigid, appressed white pile; antennæ, tibiæ, base of front tarsi, and hind tarsi except the last two joints, red ferruginous; third joint of the antennæ ovate. Length of body, 6 to 7^{mm}; of wings, 5 to 6^{mm}.

Black-green, moderately shining, clothed with short, rigid, appressed white pile. Vertex of the male black, shining; front and face clothed very thickly, with dilutely lutescent pollen, a bare spot, however, above the antennæ; facial tubercle and cheeks black and shining, lower part of the face on each side with a very large luteous spot. Front and face of the female black and shining, the latter on the lower half on each side with an oblique luteous spot; these spots and a bisinuate fascia situated below the antennæ whitish or sublutescent pollinose; the remainder of the face not pollinose. Antennæ ferruginous-red, near the base more

* *Μυια*, fly, and *λέπτα*, fine.

saturately tinged, third joint ovate, the arista concolorous. Venter cinereous, with white pollen and briefly white pilose. Femora black, the extreme tip reddish luteous; tibiæ ferruginous red, near the base becoming more luteous, anterior ones blackish near the tip, hind ones fuscous in the middle; front tarsi black, near the base red, hind ones red, last two joints black. Wings very dilutely lutescent, but near the tip cinereous and marked with a median fascia more obsoletely cinerescent.

Translation from the original, compared with the type specimens (three) in the Museum of Comparative Zoology. In the single male specimen the appressed pile of the dorsum has a more yellowish cast.

Myiolepta bella (Plate V, fig. 2).

Myiolepta bella Williston, Trans. Amer. Phil. Soc., xx, 308.

Habitat.—Washington Territory, Oregon!

♀. Length, 7 to 8mm. Deep black, shining. Front with very short black pile above, not at all pollinose; face bare, not pollinose, much produced, in profile deeply concave, below the middle briefly and gently convex. First two joints of the antennæ blackish, third joint orbicular, reddish yellow; arista brownish luteous. Thorax faintly whitish pollinose on the anterior margin; clothed with very short black pile, longer on the border of the scutellum. Abdomen broadly oval, very shining, clothed with short white pile. Halteres light yellow; tegulæ white. Legs black, with black pile. Wings lightly tinged with brown on outer part, hyaline on basal portion; stigma light brown.

Three specimens, Washington Territory, Mount Hood, Oregon.

Myiolepta varipes (Plate V, figs. 1, 1*a*, 1*b*).

Myiolepta varipes Loew, Centur., ix, 79; Williston, Trans. Amer. Phil. Soc., xx, 308.

Myolepta lunulata Bigot, Annales Soc. Ent. Fr., 1884, 537.

Habitat.—Virginia, Washington Territory, California!

♂, ♀. Length, 7 to 8mm. Black, shining. Front in female narrowly pollinose along the orbit on each side; in the male the frontal triangle pollinose on its margins. Antennæ brownish reddish, in some specimens more distinctly brown throughout; basal joints more blackish, the arista like the third joint. Face in the female in profile deeply concave from the base of the antennæ to a little above the oral margin; shining, with a broad, white pollinose cross-band below the antennæ; the sides, and a stripe running from the eye toward the oral margin, pollinose; face in the male deeply concave to a little below the middle, where there is a small but prominent mammillate tubercle, everywhere densely white pollinose, except on the tubercle and immediately below it and on the cheeks, where it is shining; the lower part of the face in both sexes not so much produced as in the allied species. Dorsum of thorax with a bronze reflection, clothed with short, appressed, yellowish white pile; on the front margin, interrupted in the middle, white pollinose. Scutellum shining black, with

segment narrowly yellowish on the sides; the second segment with a large, oval, yellowish spot on each side, extending rather further back in the male, and sometimes narrowly bordered on the sides behind with black; pile short, appressed, nearly white. Legs black, extreme tip of all the femora, basal third of all the tibiæ and more or less of the tip, and the first three joints of the middle and hind tibiæ, luteous or yellow. Wings cinerous hyaline, toward the base yellow, in the middle in front with a large subfuscous spot; distal part of the wings distinctly brownish tinged.

Three female specimens from Washington Territory and California and one male from Virginia (Pergande).

Myiolepta nigra. (Plate IV, fig. 15.)

Myiolepta nigra Loew, Centur., x, 52.

Habitat.—Pennsylvania (Lw.), New York, North Carolina!

♀. Length, 7 to 8.5mm. Black, shining, wholly short white pilose. Front shining, on each side near the eyes narrowly white pollinose. Antennæ brownish red, the first joint black; third joint orbicular; arista luteous. Face strongly concave in profile, the lower part considerably produced; across below the base of the antennæ, and a narrow stripe on each side running from the eye to the oral margin, white pollinose. Front margin of the thorax lightly whitish pollinose. Legs black, the first three joints of the middle and hind tarsi light yellow. Wings dilutely yellowish, near the base hyaline, on outer part faintly blackish. Halteres dilutely yellow; tegulæ white.

One specimen, from Professor J. A. Lintner.

RHINGIA.

Rhingia Scopoli, Entom. Carniolica, 358, 1763.

Moderately large, plump, bare species. The abdomen with yellowish-red markings. Head hemispherical, flat behind, somewhat broader than the thorax. Antennæ short, third joint short, oval, with bare arista. Proboscis long, slender, divergent at the tip. Face small, yellowish, without tubercle below, produced into a long, slender snout-like epistoma, under which the proboscis, when at rest, lies ensheathed. Eyes naked, contiguous in the male. Thorax not very long. Scutellum translucent-yellowish. Abdomen broader than thorax, not much longer, oval, arched. Legs slender, femora not thickened; hind metatarsi long, somewhat thickened. Marginal cell of wings open, third longitudinal vein gently convex anteriorly, joining the costa beyond the tip of the wing, anterior cross-vein toward the base of the discal cell, slightly oblique. Type of genus, *R. rostrata* Linné, Europe.

A well-marked genus; in the United States so far represented only by a single species, which occurs in the Atlantic States, in abundance ...ow vegetation near brooks and in meadowlands.

Rhingia nasica. (Plate V, fig. 3, 3*a*.)

Rhingia nasica Say, J. Acad., Phil., iii, 94; Compl. Wr., ii, 81; Wiedemann, Auss. Zw. Ins., ii, 115, 1.

Habitat.—Atlantic States, Indiana, Kentucky!

♂, ♀. Length, 8mm. Frontal triangle small, blackish; front in female black, lightly whitish dusted, pile short, black. Antennæ yellowish-red, third joint cordate in outline, a little larger in the female. Face red, more or less brownish on the cheeks. Thorax shining black, with two broad, whitish pollinose, dorsal stripes; pile black, very short in the female. Scutellum in the female wholly translucent, amber-colored, with very short pile, except a row of black bristles on the border; in the male largely blackish at the base, the pile longer, black, and with a row of black hairs on its border. Abdomen black, with two pairs of large yellow or reddish spots on the second and third segments; the first segment in large part obscure yellow. The black of the second and third segments opaque, fourth segment wholly shining greenish-black; pile orange or yellow; the female with less, nearly bare, except on the second segment. Venter light yellow on basal portion. Legs in large part brownish-yellow; femora black, a ring on the tibiæ, and the posterior metatarsi brown. Wings with a strong yellowish or brownish tinge.

Numerous specimens; New England, Indiana (Coquillett), Kentucky.

EUGENIAMYIA.*

Eugeniamyia Williston, Canada Entomologist, xiv, 80, 1882; Proc. Am. Phil. Soc., xx, 309.

♂. Rather large, dark ferruginous red species, nearly bare, with short hairs. Head narrower than the thorax. Eyes bare, contiguous. Antennæ situated below the middle of the eyes in profile, short, third joint short and quadrate; arista basal, plumose. Posterior orbits swollen. Face much produced downwards and forwards, somewhat conical, truncate, with an obtuse, prominent tubercle in the middle. Thorax longer than broad; in front and above the root of the wings, the postalar callosities, and on the border of the scutellum, with strong bristles. Abdomen elongate, nearly twice the length of the thorax, of nearly equal width throughout, narrower than the thorax. Femora all swollen, and with short bristles below, hind femora more swollen and elongate, and the spurs stouter, tibiæ with a circlet of short spines at the tip, the hind pair with short spines scattered irregularly over their outer surface. Wings as in *Brachyopa*, the first posterior cell long petiolate. Type of genus *E. ferruginea* Fallen, Europe and North America.

* *Εὐγένεια*, goodness of its kind, and *μυια*, fly.

Eugeniamyia ferruginea. (Plate V, figs. 4, 4*a*, 4*b*.)

Rhingia ferruginea Fallen, Dipt. Suec. Syrph., 34, 3 (1816).

Brachyopa ferruginea Meigen, Syst. Beschr., iii, 263, 4; Zetterstedt, Dipt. Scand., ii, 686, and viii, 3125, 1; Schiner, Verh. Zool. Bot. Gesellsch., vii, 376; id., Fauna Aust., i, 326; Osten Sacken, Cat. Dipt., 128.

Eugeniamyia rufa Williston, Can. Entom., xiv, 80.

Habitat.—Washington Territory, Manitoba!, Northern Europe.

♂. Length, 14^{mm}, of wings 10^{mm}. Dark ferruginous-red. Head and antennæ shining yellowish-red, arista black, red at base. Face on the sides with a stripe of silvery pollen, not very conspicuous. Dorsum of thorax darker, almost brownish-red, with two rather broad pollinose stripes, abbreviated behind, and inclosing in front a black spot not reaching the suture; clothed with rather abundant short black hairs, and the bristles of the same color. Pleuræ with sparse yellowish pile; metanotum blackish behind. Abdomen narrower than the thorax and much longer, nearly bare, shining, somewhat brownish near the end. Basal joints of tarsi yellowish, the last one or two joints brownish; femora below near the base, especially on the middle pair, with tufts of yellow pile; the short black bristles of the femora more abundant on the under sides and near the ends, also on the outer sides of the posterior tibiæ. Wings brownish in front, lighter behind, base of marginal cell, as far as tip of the auxiliary vein, with a hyaline streak.

One specimen.

This species is recorded by Loew from Manitoba (vide O. Sacken's Catalogue, p. 128), and, upon further study, I am convinced that the species which I described as *E. rufa* must be the same.

An examination of the specimen identified as this species in the Loew type collection, since the foregoing was written, confirms this determination.

BRACHYOPA.*

Brachyopa Meigen, Syst. Beschr., iii, 260, 1822.

Exochila Rondani, Atti d. Soc. Ital. d. Sc. Nat., xi, 1868.

Moderately large, nearly bare species, of prevailing reddish-yellow, sometimes brownish color. Head somewhat narrower than the thorax. Antennæ short, third joint round or oval; arista basal, bare or pubescent. Face concave, without tubercle, subcarinate, produced downwards and forwards considerably below the eyes, truncate at tip. Eyes bare, contiguous in the male, front in female narrowed above, the distance from vertex to antennæ greater than thence to oral margin. Thorax narrowed in front. Scutellum large. Abdomen considerably broader than the thorax and scarcely longer, broadly oval. Legs simple, rather strong, the hind femora somewhat elongate, and sometimes with short bristly hairs below. Wings much longer than the abdomen;

*Βραχύς, short, ὤψ, face.

third longitudinal vein straight, anterior cross-vein before the middle of the discal cell. Types of genus, *B. conica* (Panzer) and *B. bicolor* (Fallen), Europe.

TABLE OF SPECIES.

1.—Arista bare	2
Arista pubescent (*Exochila*)	notata
2.—Face and front brownish, covered with grayish pollen; abdomen mostly brown	vacua
Face reddish-yellow, shining except a pollinose band below the antennæ; front of female on upper two-thirds blackish. Abdomen reddish-yellow with slender brown incisures	media

Brachyopa notata. (Plate V, figs. 5, 6.)

Brachyopa notata Osten Sacken, Bull. Buff. Soc. Nat. Sci. iii, 68; Cat. Dipt., 248; Williston, Proc. Am. Phil. Soc., xx, 308.

Habitat.—White Mountains, Mount Hood, Washington Territory!

♂, ♀. Length, 6^{mm}. Head light yellow, with faint silvery pollen, and, on the front, with very short white pile. Antennæ a little more reddish, the arista reddish-brown, with rather long pubescence. On the cheeks in front a faint brownish stripe running from the eye. Thorax ochraceous, with short dusky pile; in the middle above a slender, and on each side a broad, whitish dusted stripe. Scutellum reddish-yellow, nearly as long as broad, triangular in outline, with the apex rounded; the pile black. Abdomen brownish-yellow, the segments with narrow, but distinct, dark brown posterior borders, and, in the middle, with a slender brown stripe, more or less interrupted before each transverse fascia, sometimes only showing a brown spot on each segment, wanting on the fourth. Legs reddish-yellow; the base and tip of the hind tibiæ, and the hind tarsi, reddish, on the latter more or less brownish. Wings somewhat tinged with brownish-yellow, distinctly brownish at the tip and along the last section of the fourth vein and the posterior cross vein; stigma brownish, posterior cross-vein only a little longer than the penultimate section of the fourth vein, the including angle nearly rectangular.

Two female specimens from Mount Washington, N. H. (Dr. George Dimmock, No. 1490), and two from Mount Hood, Oregon, and Washington Territory, both males. The latter two specimens show no differences whatever, that I can see, except that the color is a little darker. The last two joints of the four front tarsi in all are brown.

Brachyopa media. (Plate V, fig. 7.)

Brachyopa media Williston, Proc. Amer. Phil. Soc., xx, 308.

Habitat.—Kern County, California!

♀. Length, 6 to 7^{mm}. Face and lower third of front reddish-yellow across below the antennæ, where there is a band of silvery with an oblique, slender, brownish stripe. Antennæ narrow, third joint large; arista yellowish-brown, bare.

Front divergent on the sides below, on the upper two-thirds black, covered with whitish pollen. Thorax black, thickly covered with whitish pollen, in the middle in front with two black linear stripes; humeri, post-alar callosities, and the scutellum, yellowish-red, the last rounded, much broader than long. Pleuræ dark, thickly whitish dusted, a black spot above the middle and hind coxæ. Abdomen reddish-yellow, with slender brownish hind borders on the second, third, and fourth segments. Legs brownish-yellow, the last two joints of all the tarsi blackish; hind tibiæ, and basal joints of hind tarsi, brownish. Wings nearly hyaline, faintly clouded at the tip; stigma yellowish; posterior cross-vein not much longer than the penultimate section of the fourth vein, the included angle obtuse.

One specimen (H. K. Morrison). This species is allied to *B. bicolor* of Europe, but differs from a single specimen I have for comparison, as well as the description, in the front being broader below, and black above, in the tarsi, etc.

Brachyopa vacua.

Brachyopa vacua Osten Sacken, Bull. Buff. Soc. Nat. Sci. iii, 68 (by typographical error *racua*); id., Cat. Dipt., 247; Williston, Proc. Am. Phil. Soc., xx, 308.

Brachyopa cinereo-vittata Bigot, Annales Soc. Ent. de France, 1884, 537.

Habitat.—Canada, California!

"♀. Length, 8 to 9^{mm}. Brownish-gray, thorax with three brown stripes; abdomen brown, its basal third whitish-yellow, with a brown line in the middle; arista bare.

Face, front and vertex, densely clothed with a grayish pollen; lower part of the face very much projecting; a brownish stripe runs across the cheeks from the eye to the mouth; antennæ brownish, grayish pollinose, arista bare, brownish-reddish at base. Thoracic dorsum yellowish-gray, with three brown stripes, the intermediate one geminate and abbreviate posteriorly. Scutellum brownish-yellow. Abdomen brown, shining; first and second segments whitish-yellow (as if translucent), the second brown posteriorly and with a longitudinal brown line in the middle. Legs grayish-brown, hind femora slightly incrassate, on the under side with a brush of short, spine-like bristles. Wings distinctly tinged with brownish, especially on the distal half, anteriorly; first posterior cell distinctly petiolate at the distal end, the petiole being equal in length to the small cross-vein.

"*Habitat.*—Quebec, Canada (Mr. F. X. Belanger), a single male specimen. The interval between the distal ends of first posterior and discal cells is a shallow sinus, and not a right angle as in *B. notata.*"—Osten Sacken, l. c.

A single female specimen from Kern County, California, I have scarcely a doubt belongs here; the differences from the description are very slight. The color throughout is apparently a little darker, and the legs are rather reddish than grayish brown. I do not see that the

lower part of the face projects more than in *B. notata*. The third joint of the antennae is distinctly smaller than that of the females of either of the preceding species.

VOLUCELLA.*

Volucella Geoffroy, Hist. des Insects de Environs de Paris, vii, 1764.
Cenogaster Dumeril, Exposition, etc., 1801, and Dict. d'Hist. Natur. Strasburg, 1817.
Temnocera St. Fargeau and Serville, Encycl. Meth., x, 786, 1825; Macquart, Dipt. Exot., ii, 2, 26.
Ornidia St. Fargeau and Serville, Encycl. Meth., x, 786, 1825.
Atemnocera Bigot, Bullet. bi-mens. Soc. Ent. France, No. 12, 1882.

Medium to large size, robust, sometimes thickly pilose, black, metallic blue, brownish-yellow with darker abdominal fasciæ, or nearly wholly yellowish species. Head somewhat broader than the thorax, the posterior orbits narrow. Antennæ comparatively small, first two joints short, of nearly equal length, third joint elongate, sometimes slender, often narrowed in its middle or toward the end; arista plumose, sometimes with long and abundant pile, at other times shorter, sparser. Face more or less excavated below the antennæ, with a prominence below the middle, at other times straight or convex in profile, the epistoma considerably produced downwards and somewhat forwards, conical, pointed at the tip, with a small notch. Eyes pilose, sometimes bare in the female, contiguous above in the male. Thorax sometimes with yellow lateral stripes, sometimes densely pilose. Scutellum large, often translucent, sometimes with hairs or distinct bristles on its border. Abdomen oval, strongly arched, not very much longer than the thorax. Legs simple, moderately strong, all the femora of nearly equal length. Wings large and broad, marginal cell closed, anterior cross-vein usually towards the base of the discal cell and rectangular, sometimes near the middle and oblique. Third longitudinal vein not bent into the first posterior cell, fourth vein bent inwards at the end, the third vein beyond the union directed obliquely forward; calyptræ large.

The face in the female frequently differs in profile somewhat from that of the male, the depression below the antennæ being a little greater, and the lower part of the face more receding; the third joint of the antennæ, also, is sometimes more expanded, especially at the base.

Contrary to the opinion of some excellent dipterologists I have rejected the genus *Temnocera*, for the following reasons: In several of the species of our fauna, bristles or bristly hairs exist on the scutellum and post-alar callosities. In some of these, to separate them generically would be absurd, for the conformation and coloration throughout are strikingly similar to those of others without. Moreover, the bristles in some are so fine that they are with difficulty distinguished. Hence

*Diminutive from *volucer*, swift.

I think that this character is of but little value to distinguish our species. The other character used for this genus is of less value still: I mean the excision of the third joint of the antennæ above, as such excision in a less degree is found in most of the Volucellæ. Mr. Bigot has established the genus *Atemnocera* on the presence of bristles on the scutellum alone, the third joint of the antennæ not being excised above. If the small difference that is thus left as the sole character for *Temnocera* were made a criterion by which to base other genera in this family, how many would there be?

TABLE OF SPECIES.

1.—Thorax and abdomen very thickly furry, more or less yellowish, pilose. Face much excavated below the antennæ; arista very long and densely plumose; second segment of the abdomen yellow on the sides; wings with a dark brown spot; large species 2

Thorax and abdomen not thickly pilose 3

2.—Face black or chestnut; yellow pilose; dorsum of thorax and pleuræ wholly yellow pilose . . . . . evecta

Face yellow; thickly yellow pilose; cheeks black; dorsum of thorax and pleuræ black pilose. . . . . facialis

3.—Deep black, green, violet, or coppery colored species; cheeks not light colored . 4

Prevailing color light; cheeks yellowish, wholly so or with a black stripe . 9

4.—Base of wings yellow; face light yellow, with yellow pile; sides of thorax and the scutellum reddish or yellowish; basal two-thirds of tibiæ reddish yellow . . . . . vesiculosa, eugenia.

Base of wings not yellow but hyaline or brown 5

5.—Wings hyaline, except a spot at end of auxiliary vein and on the cross-veins; body wholly deep colored except, sometimes, the head 6

Wings more or less dark brown on the basal part in front 8

6.—Face much produced downward into an acute cone; third joint of antennæ elongate as usual 7

Face obtuse below, not produced downward, in the middle with an obtuse tubercle; third joint of antennæ very short, triangular . . . . . obesa

7.—Face and front wholly black . . . . . Comstocki

Face and front, except the cheeks, deep reddish-yellow . . . . . victoria

8.—Wings broadly deep brown at the base, ending abruptly near the tip of auxiliary, and thence yellowish along the costa; abdomen clothed chiefly with short erect hairs; face considerably excavated below the antennæ. mexicana

Wings brown in the costal and subcostal cells; face more or less red, lightly excavated below the antennæ . . . . . anna

9.—Third joint of antennæ deeply excised above; face produced forwards below Hagii

Third joint of antennæ not, or but little, excised above; face produced downward, as usual. 10

10.—Large species (11^{mm}+) 11

Smaller species 13

11.—Face and cheeks wholly yellow . . . . . megacephala

Face and cheeks not wholly yellow 12

12.—Cheeks black, shining; black of the abdominal segments prolonged in the middle anteriorly (11-12^{mm}) . . . . . avida

Cheeks yellow with a rather narrow brown or black stripe; black of the abdominal segments less distinct in the middle . . . . . isabellina

13.—Second vein near the tip regular, *i. e.*, is not bent into the submarginal cell; face and cheeks without black stripes; wings hyaline, with a faint brown spot at the tip of the auxiliary vein 14

Second vein irregular near the end, bent into the submarginal cell 15

14.—Abdomen resplendent coppery blue, the base yellow or translucent, vesiculosa

Abdomen mostly yellow, brownish toward the tip, with three pairs of small quadrangular spots on the sides . . . . . sexpunctata

15.—Face yellow; wings hyaline with brown spots 16

Face with a black stripe; wings subfasciate 17

16.—Spots of wings distinct; black abdominal fasciæ obsolete in the middle . tau

Spots of the wings less conspicuous; black abdominal fasciæ complete . . satur

17.—Wings distinctly fasciate with brown; pleuræ with two yellow spots; yellow bands of abdomen interrupted . . . . . pusilla

Wings less distinctly fasciate; pleuræ with five or six yellow spots; yellow abdominal bands entire . . . . . fasciata

For other species see descriptions.

Volucella evecta. (Plate VI, figs. 6, 6*a*.)

Volucella evecta Walker, Dipt. Saunders., 251.

Volucella plumata Macquart (non Fabr.), Dipt. Exot., 4e Suppl., 131.

Habitat.—New England, Middle States, British Possessions!

♂, ♀. Length, 12 to 15mm. Face black, or pitchy black, clothed with moderately abundant yellow pile on the lower two-thirds, considerably excavated below the antennæ and with a distinct broad protuberance near the middle; in the male produced directly downwards; in the female more rounded on the lower part and projecting rather more forward. Third joint of antennæ a little broader at the base, reddish-yellow or reddish-brown, black at the base; arista more than twice the length of the antennæ; long and abundantly feathery plumose with delicate pile. Front in female rather narrow, clothed with yellow pile; yellowish on the sides, with a blackish median stripe; frontal triangle in the male small. Eyes bare in female, or at most only sparsely pilose near the top, thickly pilose in male. Thorax black, shining, very abundantly light yellow pilose on the sides of the dorsum; pleuræ and scutellum less abundantly pilose in the middle, where the ground color shines through. Scutellum light yellow. Abdomen black, shining; on the sides of the second segment with a large triangular yellow spot; thickly covered with yellow pile, which is less abundant in the middle of the segment; elsewhere the abdomen is thickly covered with erect black pile, except rarely in some specimens (var. *sanguinea*, new) the posterior portion of the third and the remaining segments is clothed with longer, erect, bright red or yellow pile. Legs black; the tip of the femora and basal and terminal portions of the tibiæ, and all the tarsi, reddish. Wings brownish-hyaline, clouded along the veins; a large spot opposite the tip of auxiliary reaching to the fourth vein. Anterior cross-vein nearly rectangular, situated near the proximal third of the discal cell. Fifty specimens.

This species is related closely to *V. bombylans* of Europe, the variety

sanguinea corresponding to var. *haemorrhoidalis*. The species, however, shows a structural difference in the facial profile, the excavation being less below the antennæ.

Volucella facialis.

Volucella facialis Williston, Proc. Am. Phil. Soc., xx, 316.

Habitat.—California!

♂, ♀. Length, 14 to 15mm. In structure precisely like the preceding and corresponding in markings to *V. bombylans*, var. *plumata* of Europe. That it may only be a variety of *evecta* I am not prepared to deny; certainly greater differences exist among the varieties of *V. bombylans*.

Face broadly yellow in the middle, and thickly clothed with yellow pile; the eyes of the female more pilose, the dorsum of the thorax and the pleuræ black pilose, otherwise not differing from *V. evecta sanguinea*.

Volucella esuriens mexicana. (Plate VI, figs. 5, 5*a*.)

Syrphus esuriens Fabricius, System Entom., iv,.281, 10; Syst. Antl., 226, 9.
Volucella esuriens Wiedemann, Auss. Zw. Ins., ii, 197, 4; Schiner, Novara Exped., ii, 1, B. Dipt., 356, 54.
Volucella mexicana Macquart, Dipt. Exot., ii, 2, 25; tab. 5, fig. 3; Schiner, *l. c.*, 55; Osten Sacken, West. Dipt., 332.
Volucella dispar Macquart, Dipt. Exot. 1er Suppl., 123; tab. xi, fig. 2; Schiner, *l. c.*
Volucella metallifera Walker, List, etc., iii, 636.
Volucella Maximiliani Jaennicke, Neue Exot. Dipt., 87; Schiner, *l. c.*

Habitat.—California, Arizona, Florida!, Mexico (Macq.), New Granada (Macq.).

♂, ♀. Length, 16 to 19mm. Face deep chestnut-black, moderately shining, considerably excavated below the antennæ, with a rounded protuberance near the middle, below this perceptibly concave, produced directly downward into a conical tip, slightly notched at the extremity; clothed with short white pile; cheeks shining black. Antennæ varying from a dark reddish to a quite black, or sometimes the tip only reddish; third joint rather short, expanded at the base; arista moderately plumose, on the upper side longer than below. Front in female narrow above, gently convex, with yellowish pile, more black at the vertex or sometimes the pile may be wholly blackish; on each side there is a well marked concentric groove. Eyes in both sexes obscurely yellowish pilose. Thorax deep bluish-black, sometimes with a slight coppery luster; clothed with black pile, at times obscurely yellowish in front. Scutellum deep chestnut-black. Abdomen a deep resplendent violet or purplish, sometimes with a coppery luster, clothed with short stiff bristle-like hairs and on the last two segments with black pile. Legs black, with black pile. Wings hyaline; on the basal portion to a little beyond the tip of the auxiliary vein, brownish black; the end is cut off squarely and, beyond, the subcostal cell is saturate yellow, extending somewhat outwards; the dark color extends backward to beyond the

fourth vein, clouding the cross-veins; the outer part of the first vein and the tip of the auxiliary are yellow.

Schiner (*l. c.*) compared the type of *Maximiliani* Jaen., and asserted it to be the same as *mexicana*, and, moreover, that both this and *dispar* Macq. were varieties of *esuriens* Fab. Structurally they are all alike, but the color in *esuriens* is more brownish. I have examined a large number of specimens from California (Coquillett), Arizona (Comstock), Texas, and Florida (Riley), and find them all quite uniform in coloration, hence it seems to be advisable to retain the varietal name.

Volucella Comstocki, n. sp. (Plate VI, fig. 9.)

Habitat.—Arizona, New Mexico!

♂, ♀. Length, 12mm. Face nearly perpendicular in profile, scarcely at all excavated below the antennæ, shining bluish-black, with long, rather abundant, black pile; front like the face, with black pile, sides nearly parallel; frontal triangle prominent, with longer black pile. Antennæ brownish-black, the third joint in the male only a little narrowed beyond the middle, the basal portion scarcely half as wide again, in the female twice as wide as on its narrowest part; arista but little longer than the joint, loosely plumose. Eyes thickly pilose. Thorax deep shining blackish blue, with rather abundant, moderately long, black pile. Scutellum deep chestnut on its disk, with black pile. Abdomen brilliant dark blue, with short black pile, longer on the terminal segments. Legs black, black pilose. Wings hyaline with a small brown spot at the tip of the auxiliary vein, faintly clouded on the outer part and posterior border.

Two specimens from Arizona (Professor Comstock), and one from New Mexico (G. F. Gaumer).

Volucella Anna, n. sp. (Plate VI, fig. 8.)

Habitat.—Arizona!

♂. Length, 14mm. Face chestnut-colored, shining bluish-black on its lower part and on the cheeks, below the antennæ faintly dusted with white; sub-antennal excavation slight, the convexity of the middle not prominent, but greater than in *V. Comstocki*. Antennæ red, third joint moderately expanded near the base. Eyes pilose with rather short pile. Thorax deep shining bluish-black, with black pile. Scutellum chestnut-colored on its upper surface, with black pile and a row of black bristly hairs on its border. Abdomen deep blue, with a coppery reflection, clothed with short black pile, longer on the posterior segments. Legs black. Wings hyaline, costal and subcostal cells brown, nearly black at the base; a small blackish spot at the tip of the auxiliary vein, a narrow brown cloud on the furcation of the second and third veins, the anterior cross-vein and cross-veins at base of discal and posterior cells.

One specimen.

Volucella eugenia, n. sp. (Plate VI, fig. 10.)

Habitat.—Bahamas, Florida!

♀. Length, 14mm. Front and face light yellow, clothed with light yellow pile; cheeks deep shining black. Face considerably excavated below the antennæ, and with a rather large protuberance near the middle, much produced directly downward to a very acute tip. Antennæ yellow, third joint a little broadened at the distal end, much excised on its upper border near the middle; arista a little longer than the joint, moderately pilose. Eyes pilose. Dorsum of thorax olive-greenish-black, somewhat chestnut or even yellowish on the sides; clothed with short, rather sparse, pile, intermingled with yellowish on the humeri; along the dorso-pleural suture with short bristles, longer and more abundant on the post-alar callosities. Scutellum black at the base, becoming reddish on its border, yellowish below; along the border there is a row of black bristles. Abdomen brilliant violet, clothed with abundant, short black pile. Legs black; all the tibiæ, except the terminal fourth or third on the hind pair, yellowish red. Wings hyaline, cross-veins narrowly clouded with brown, the auxiliary vein and nearly all the first, the second, third, and fourth to near the cross-veins, conspicuously yellowish, the intervening cells tinged with the same color.

Two specimens. Is nearest allied to *V. abdominalis* Wied., but will be distinguished by the lateral margins of the thoracic dorsum, and the scutellum, not being so distinctly yellow; it also lacks the large triangular yellow spot in front of the scutellum.

Volucella avida. (Plate VI, fig. 12.)

Volucella avida Osten Sacken, West. Dipt., 333.

Habitat.—California!

♂, ♀. Length, 10 to 12mm. Antennæ light brown; arista loosely plumose above; third antennal joint about one-half or two-thirds of the length of the arista, its basal half a little expanded; face pale whitish-yellow, a narrow black stripe runs from the mouth upward, becoming paler and finally obsolete before reaching the antennæ; cheeks black, shining; frontal triangle of the male whitish-yellow, beset with black pile; profile straight, in the male with a slight depression under the antennæ, more receding on the lower part in the female. Thorax greenish-black; on each side between the humerus and scutellum a rather broad, dull, yellow stripe; in front of the scutellum a yellowish, rather obscure parallelogram, marginate anteriorly; sides of the dorsum and pleuræ beset with yellowish-white hairs. Scutellum yellowish, subtranslucent, beset with black hairs along the edge. Abdomen pale honey-yellow; first segment black, the second and third segments posteriorly with a narrow black margin, expanded on each side along the lateral margin, and prolonged in the middle in the shape of a longitudinal black stripe toward the anterior margin; on the second segment this stripe is broadly expanded so as to coalesce with the black of the

first segment; on the third segment, on the contrary, it is tapering a teriorly; fourth segment with a black crossband a little beyond t middle, with a subtriangular expansion in the middle reaching towa the fifth segment; fifth segment black on the sides, in the male the h popygium black; the abdomen is clothed with short black pile on i black portions and with yellowish pile on the yellow regions, especial on the sides of the second segment and on the posterior part. Femo black; knees and basal half of the tibiæ brownish-yellow, tarsi blac Wings hyaline; latter half of the costal cell and the interval betwe the auxiliary and first longitudinal vein as far as the stigma brownis stigma dark brown, central cross-veins and small cross-veins with w defined brown clouds; the second vein ends in the first some little di tance before the tip of the latter.

Five specimens.

Volucella isabellina, n. sp.

Habitat.—Arizona!

♀. Length, 15 to 16mm. Face pale whitish-yellow, with a narro brown stripe on the lower two-thirds, paler and obsolete above; pile i the middle black, on the sides mixed with white; cheeks with a rath narrow brownish-black stripe running from the eye to the tip; behin with a fringe of white pile. Front of the same color as the face wit side grooves and clothed with black pile. Front gently and evenly co vex; face lightly concave below the antennæ, receding on its inferi half. Antennæ brownish, or reddish; rather short, the third joi somewhat longer than in *avida*, expanded on its basal portion. Thor greenish-black; on each side between the humerus and scutellum a rath broad dull honey-yellow stripe; in front of the scutellum a yellowis rather obscure, parallelogram; the black is thickly dusted, leaving sle der stripes and the narrow borders shining blackish; sides of the d sum and the pleuræ beset with the yellowish-white pile, on the post-al callosities mingled with black hair. Scutellum yellowish, subtransl cent, beset with black pile on its disk and edge. Abdomen light y low; first segment black, second segment posteriorly with a rather n row black margin, obsolete in the middle, expanded somewhat towa the sides, in front with a narrow black triangle reaching to about t middle of the segment; third segment with the anterior margin lig yellow, more or less red on the middle part, a deep black on the pos rior portion, which on the sides reaches to near the middle of the s ment; this black border is a little wider than that on the preceding s ment and like that interrupted, or obsolete in the middle; fourth s ment with a black spot on each side on it posterior margin; on the a terior angles of each segment there is light yellow pile, elsewhere wi short black hairs. Femora black at the base, on the other part, and t basal portions of the tibiæ and tarsi, brownish-yellow; terminal pa of tibiæ and the last three joints of all the tarsi, darker, the latter bla

at the tip. Wings pure hyaline; stigma yellowish-brown; the anterior cross-vein, furcation of second and third longitudinal veins, and veins at base of discal and last posterior cells narrowly clouded with deep brown.

This species resembles *V. avida*, but differs in the greater size, in the cheeks not being wholly black, in the black of the abdomen being obsolete in the middle, and in the third antennal joint being longer; the front of the female, also, is narrower above. The profile of the face in the male is probably straighter and less receding in its lower part than in the female.

Volucella vesiculosa. (Plate VI, fig. 1, 1*a*.)

Syrphus vesiculosus Fabricius, System Antl., 226, 11.

Volucella vesiculosa Wiedemann, Auss. Zw. Ins., ii, 201, 11; Macquart, Dipt. Exot. 3e Suppl., 39; tab. iv, fig. 3.

Habitat.—Pennsylvania, Connecticut, Maryland, Kentucky, Florida!, South America.

♂, ♀. Length, 9 to 10^{mm}. Head reddish-yellow; eyes of male contiguous for a long distance, the frontal triangle very small. Antennæ reddish-yellow, third joint long, a little broader at its base, but not excised on either border; arista about twice the length of joint, long plumose above, short below. Face considerably excavated below the antennæ, with a rounded protuberance, distinctly concave immediately below; pile of face short, rather sparse, white. Dorsum of thorax brilliant purple-colored, with a cobalt blue reflection, the front border, humeri, and sometimes the sides, yellow. Scutellum more yellowish, except on the dorsum, where it is more or less brilliant, like the thoracic dorsum. The pile of the thorax is sparse, black; along the lateral sutures, the post-alar callosities, and border of the scutellum with rather long, very distinct black bristles. Abdomen a beautiful brilliant purple, or coppery red, with the cobalt reflection; the first segment, and the anterior part of the second (more broadly in the middle) yellowish-white, subtranslucent; pile very short, rather abundant, whitish. Legs luteous, except the basal two-thirds or more of all the femora, and the terminal portion of the tibiæ and tip of tarsi, which are black or brown. Wings hyaline, a faint spot at tip of the auxiliary vein; anterior cross-vein rectangular, close to base of discal cell.

Five specimens.

Volucella sexpunctata. (Plate VI, fig. 2.)

Volucella sexpunctata Loew, Wien. Ent. Monatschr., v, 38; id., Centur., vi, 37.

Habitat.—Florida!, Cuba (Lw.).

♂, ♀. Length, 8 to 9^{mm}. Allied to *V. vesiculosa*. Yellow and luteous, moderately shining. Front, except the vertex, black pilose, face considerably produced, shining, below the antennæ lightly pollinose, protuberance large, obtuse; pile short, whitish. Pectus black, or with four black spots. Dorsum of thorax more reddish or brownish above,

clothed with short white pile; on the sides and border of scutellum with rather long yellowish white bristles; the scutellum itself more yellowish translucent. Abdomen nearly bare; yellow translucent, or even subtransparent at the base, towards the tip often brownish, perhaps more or less the result of drying; the posterior margins of second, third, and fourth segments each with a rather small, quadrangular black spot, on either side near the lateral margin; on the second and third segments they are broader than long, and often joined by a posterior brown fascia; the second and third segments sometimes in the middle behind with a distinct black spot; pile very short, near the posterior margins of the segments black, elsewhere pallid. Legs yellow, tip of anterior tibiæ and tip of all the tarsi blackish. Wings quite hyaline; a small brownish spot near the tip of auxiliary vein; the third vein reaches the costa near tip of wing, the second vein joins the first very near its end, sometimes beyond it, so that the marginal cell is open.

Four specimens, compared with the types at Cambridge.

Volucella satur. (Plate VI, figs. 11, 12 *b*.)

Volucella satur Osten Sacken, West. Dipt., 333.

Habitat.—Kansas, Colorado! Utah (O. S.).

♂, ♀. Length, 9 to 10^{mm}. Antennæ light brown, arista reddish, loosely plumose, third joint nearly as long as the arista, very narrow in the male, a little broader and more expanded in the female. Face yellow, a black stripe runs obliquely from the lower corner of the eye to the anterior oral margin; behind it the cheeks are narrow; profile of the face nearly straight in the male, in the female a little receding on the lower part, the depression below the antennæ is very slight. Frontal triangle of the male yellow, beset with black pile, the vertex black; in the female the front is broad, of a greenish tinge, as if underlying the yellow; a slender median yellow line runs from the antennæ towards the yellow vertex; the ocelli are on a cordiform black spot. Eyes pilose. Thorax blackish-green; on each side between humerus and scutellum a rather broad, dull, honey-yellow stripe, with a short black streak in the middle; in front of the scutellum a yellowish, rather obscure parallelogram, emarginate anteriorly; pleuræ with a large yellow spot, beset with yellow pile. Scutellum yellow, with black hairs on the edge. Abdomen honey-yellowish; first segment black, second and third with a narrow black hind border; the black border of the second segment is connected with the black of the first segment by a black longitudinal stripe, which is narrow in the female, broad and triangularly expanded anteriorly in the male; fourth segment with a broad black hind border; fifth segment black. Femora black; knees and two-thirds of the tibiæ brownish-yellow, the last third black, or, on the intermediate pair, brownish; tarsi reddish at base, brownish or black at tip. Wings grayish-hyaline; stigma yellowish, with a small pale brown cloud; cross-veins at the base of first and last posterior cell

f the discal cell, and the origin of the third vein, with small indistinct rowish clouds; there are still smaller, almost imperceptible clouds at he tip of the second vein, near the junction with the first, and on the urvature of the vein closing the first posterior cell; the latter section f vein is more rounded here than in *pusilla* and *fasciata;* the marginal ell is not quite so much expanded at its end; anterior cross a little before the middle of the discal cell.

Three specimens, Western Kansas and Colorado.

Volucella tau. (Plate VI, fig. 13.)

Volucella tau Bigot, Annales Soc. Ent. de France, 1883, 84.

Habitat.—California!, Mexico (Bigot).

♂, ♀. Length, 9 to 10^{mm}. Two male and one female specimens from California, which agree with Mr. Bigot's description of a male from Mexico, are very closely allied to *V. satur*, yet are apparently different. In all three specimens the spots on the wings are very distinct dark brown, though small; the antennæ are distinctly longer and more slender (see figure). Mr. Coquillett, to whom I am indebted for the privilege of examining the specimens, has also compared a number more with drawings of the antennæ of both species which I sent him, and finds the difference constant. The female has the markings of the abdomen nearly as in *satur*, that is with the black cross-bands entire; but the male is very distinctly different. In this sex the black markings are confined to the first segment, and an inverted ⊤-shaped spot on the second segment, the posterior black band being abbreviated a considerable distance before the lateral margin. The third and fourth segments have only an indistinct, somewhat brownish, color behind. The hypopygium is black.

Volucella obesa. (Plate V, fig. 9.)

Syrphus obesus Fabricius., Syst. Ent., 763, 5; Ent. Syst., iv, 282; Syst. Antl., 227.
Volucella obesa Wiedemann, Auss. Zw. Ins., ii, 199; Macquart, Hist. Nat. Dipt., i, 494, 5.
Ornidia obesa St. Pargeau and Serville, Encycl. Meth., x, 786.
? *Volucella azurea* Phillipi, Verh. Zool. Bot. Gesell., 1865, 734, pl. xxvi, fig. 35.

Habitat.—Tropical regions (auct.), San Domingo, Mexico, New Mexico!, Florida, (O. S.).

♂. Length, 9.5^{mm}. Brilliant shining green with violet reflections. Antennæ brown, third joint very short, subtriangular; arista yellow, black at tip, thickly plumose. Frontal triangle small, only a little swollen, pile black. Face a beautiful green with violet reflections in certain lights, thinly pilose; immediately below the antennæ there is a large white pollinose spot, and opposite it, near the eyes, a small one. In profile the face is obtusely conical below, not descending far under the eyes; below the antennæ rather deeply concave, near the middle of the face with a large hemielliptical tubercle, and above it, on each side, a somewhat smaller one, so that two distinct parallel grooves

are seen corresponding to the antennæ. Eyes thickly pilose, contiguous for a long distance; vertical triangle small, black. Thorax with short, black pile, in color brilliant green, above in front with distinct bronze or violet reflections. Second segment of the abdomen on each side with a large, less shining, and more purplish, but not conspicuous spot; pile of abdomen short, black, on the fourth and fifth segments longer, yellow. Venter, pectus, and cheeks very brilliant bright green. Legs black, the femora slightly shining green; tarsi more brownish or reddish black, the hind metatarsi thickened, and as long as the remaining joints together. Wings nearly hyaline, faintly brownish toward the base; a small but very distinct brown spot reaches from the costa to the fourth vein over the cross-vein, which is very near to the base of the discal cell; at the junction of the first and second veins there is a minute brown spot; the marginal cell at the tip juts strongly into the submarginal cell.

Five specimens from San Domingo and one from New Mexico (E. Keen). The synonymy of *V. azurea* Phillipi seems probable; the figure does not, however, show the bend near the tip of the second vein.

Volucella pusilla. (Plate VI, figs. 3,3*a*.)

Volucella pusilla Macquart, Dipt. Exot., ii, 2, 21, 1, tab. v, fig. 1.

Habitat.—Florida!, Cuba.

♂ ♀. Length, 9 to 10^{mm}. Face produced directly downwards, only slightly excavated below the antennæ, with a slight convexity on the lower half; yellow, with white pile; a rather broad black stripe extends from the base of the antennæ to the tip, on the oral margin confluent with the black of the cheeks, the latter with a narrow yellow stripe. Front in female yellow, with broad black stripe from the ocelli to the antennæ; the pile is fuscous, black at the vertex. Antennæ brownish-black, the second joint yellow at its base, third joint, in the male, long, rather slender, very little broader at the base; in the female much broader throughout, with the basal portion distinctly convex above; arista a little longer than the joint, loosely plumose. Eyes in both sexes thickly black pilose. Dorsum of thorax black shining in its middle, with blackish and yellowish pile; on the sides, extending from the humeri to the posterior angles, with a broad yellow stripe containing an oval black spot in its middle; in front of the scutellum there are two small, rounded, yellow spots; pleuræ with two yellow spots, the larger with a bush of whitish pile on the upper half, the other, smaller, spot is above the front coxæ. Scutellum light yellow, translucent, towards the base with yellow pile, along the border with conspicuous black pile. Abdomen black, a little shining, on the anterior part of the second segment with a narrowly interrupted yellow band, broadest on the sides; third segment on each side with a large quadrangular spot, not reaching the margin and inclosing an oval blac
times confluent with the black of the m
ments the pile is black on the

ond the third segment, longer, whitish. Legs black, with black pile, he first and second joints of all the tarsi yellow, the knees more or ess reddish. Wings with brown markings as follows: across from the rigin of the third vein to the origin of the posterior basal cross-vein, rom the tip of the auxiliary to the fourth, clouding the anterior ross-vein, and from the costa beyond the auxiliary vein to the outer osterior angle of the discal cell, sharply defined on its inner border nd reaching to the tip of the third vein, the posterior portion infus- ate, the costal cell somewhat brownish; anterior cross-vein oblique, a ittle before the middle of discal cell; end of marginal cell expanded.

Four specimens (Professor Riley).

Volucella fasciata. (Plate VI, fig. 4.)

Volucella fasciata Macquart, Dipt. Exot., ii, 2, 22, 2; pl. v, fig. 2; Osten Sacken, West. Dipt., 334.

Habitat.—Western Kansas, Colorado, Texas, Mexico, Carolina!

♂, ♀. Length, 7 to 8^{mm}. Resembles *pusilla* closely, but is distinct. The yellow stripe of the cheeks is broader, the antennæ yellow, brownish toward the tip, the yellow lateral stripes of the dorsum of the thorax narrower, the meso-pleural spot smaller, and in addition there are three small spots below, nearly touching each other, the hindmost one in front of the halteres. The abdomen has three rather broad yellow bands; the anterior one on the second segment the broadest, widest toward the middle, interrupted or subinterrupted; the others, on the anterior part of the third and fourth segments, entire; venter, in addition to the broad basal band, with one on the third segment. Legs black; the knees, basal portions of the tibiæ, and first three joints of all the tarsi, yellow. Wings with the markings similar in pattern to *pusilla*, but faint, showing indications of three or four fasciæ; the small cross-vein more oblique, and joining the fourth vein very near the middle of the discal cell.

It is not improbable that this is the *V. vacua* of Walker, List, etc., iii, 637.

Volucella victoria, n. sp.

Habitat.—New Mexico!

♀. Length, 9.5^{mm}. Deep shining blue-black. Front and face amber yellow, the cheeks shining black; lateral crescentric grooves of the front very distinct; a minute spot at the ocelli black; pile black; face below the antennæ very shallowly concave, produced downwards into an acute cone, thinly black pilose. Antennæ wholly yellowish-red; third joint of moderate length, a little broader at the base, scarcely emarginate above; arista black, moderately plumose. Occiput black, except for a little distance below the vertex, on the sides dusted with whitish. Thorax thinly pilose, in front chiefly light colored, behind chiefly black. Scutellum deep pitchy-black; on its border, and also on the post-alar callosities, with fine black bristles. Abdomen with a blue reflection,

clothed with very short black pile, a little longer toward the tip. Legs wholly black, the tarsi on the inner side with short reddish pile. Wings nearly hyaline; a black spot at the tip of the auxiliary vein, beyond which the stigma is yellowish; the small cross-vein, the cross-veins at base of discal and third posterior cells, the last section of the fourth vein, and the second vein near its tip with narrow black clouds; second vein near its tip gently bent into the submarginal cell, last section of the fourth vein strongly bent inwards.

Three specimens, New Mexico (G. F. Gaumer), for which I am indebted to Mr. Eugene L. Keen, of Philadelphia.

Volucella (Temnocera) megacephala.

Temnocera megacephala Loew, Centur., iv, 57; Osten Sacken, Cat. Dipt., 130.

Habitat.—California (Lw.), Arizona, Mexico!

♀. Length, 13mm. Short, broad, luteous. Head very large, sordid luteous; front and face with short black pile; pile of the eyes very short, whitish. Occiput and cheeks dilutely luteous; face moderately produced, the usual tubercle nearly wanting. Antennæ ochraceous, very short, the third joint moderately excised above. Dorsum of thorax with two rather obsolete, broadly separated, blackish stripes. Scutellum wholly luteous. Pile of the dorsum and the scutellum, except its border, short, black, the border of the latter with pallid, less abundant pile, and without bristles. Pleuræ above luteous, below black. Abdomen broad, subfuscous, the base of each segment narrowly luteous and clothed with pallid pile. Venter dilutely luteous, pile very short pallid, a black median interrupted stripe black pilose. Coxæ and trochanters black; legs ochraceous luteous, pallidly pilose, tip of the tarsi obscurely fuscous. Wings hyaline, apical half of the costa broadly margined with cinereous black; the transverse veins clouded with a more saturate black color.

Translation from the original, compared with the type specimen in the Museum of Comparative Zoology at Cambridge.

Three specimens, male and female, apparently of this species, from Arizona and Mexico (J. Aquilera), I have since examined. The pilosity of the eyes is woolly, the pile of the face only in part black. The male eyes are contiguous for a very long distance, the frontal triangle small. The third joint of the antennæ is but very slightly excised above, and the absence of bristles on the scutellum makes it seem strange that Loew should have located the species under Temnocera. In the male specimen there is, in addition to the two remote dorsal thoracic black stripes, which might better be called spots, a median one. In only one specimen does Loew's description of the abdomen apply; in the other the second segment is luteous, except the outer posterior parts. The third segment is broadly yellow in front, black behind; the fourth segment broadly yellowish and luteous, except two large, indefinite black spots behind. The species is a large one, more especially characterized

by its large head. In all my specimens the length is somewhat greater than that given above. The apical half of the costa is not at all margined with cinereous black, though the veins in that region are narrowly blackish clouded. Of course it is possible that my determination is not correct, the more so from the fact that the species belongs to a group the members of which are not easily distinguishable.

A single specimen from Mexico with the preceding (J. Aquilera), and resembling it, I have not been able to determine. The head, in structure and coloration throughout, is very nearly the same, except that perhaps the third joint is a little more excised above, and there is a broad brown stripe on the cheeks. The dorsum of the thorax, except broadly on the sides and behind, is shining black. The second, third, and fourth segments of the abdomen have a broad, indefinite, posterior blackish band. The legs are darker colored, towards the base of the femora, blackish. The wings on the outer half are almost pure hyaline; the base of the wings is brownish, lighter in the basal cells, and becoming dark brown on the outer part of the costal cell; opposite this darker color the cross-veins are all clouded broadly with dark brown, forming a large, conspicuous, coalescent dark-brown spot. The abdomen is less robust, and the size smaller (12^{mm}).

Volucella (Temnocera) Hagii. (Plate V, fig. 8.)

Volucella Hagii Jaennicke, Neue Exot., Dipt., 89.

Temnocera setigera Osten Sacken, West. Dipt., 334; v. d. Wulp, Tijdschr. voor Ent., xxv.

Habitat.—Mexico (Jaen.), New Mexico (O. S.), Arizona!

♂, ♀. Length, 14^{mm}. "Proboscis nearly twice as long as the head, pointed at the end. Face and front honey-yellowish, clothed with black pile, which is very short on the face and longer on the front; the face is excavated below the antennæ, its lower part projecting in the form of a cone, the tip of which is bifid and slightly infuscated. Antennæ: first two joints yellowish-brown; third joint light brown, excised above, so that its latter portion is much narrower; arista, feathery, black; proboscis 7 to 8^{mm} long [a little shorter in the male], black, pointed. Thorax densely clothed with a yellowish recumbent pubescence, and, mixed with it, short, black, erect pile; they almost conceal the dark greenish ground-color, as well as the obscurely visible yellowish lateral stripes and large yellowish spot in front of the scutellum; on the sides of the thorax, several stiff black bristles; a pair [or more] of such bristles, but smaller, a little in front of the scutellum; pectus blackish. Scutellum somewhat inflated, honey-yellow, beset with mixed black and yellow pubescence; along the edge fourteen stiff black bristles. Abdomen brownish-yellow [or yellow]; second and third segments with broad blackish parallel borders posteriorly, formed of short and very dense black hairs; the cross-bands thus produced are very distinct when viewed obliquely, although almost invisible when viewed from above;

that on the second segment occupies more than one-third [or one-four that on the third more than one half [or one-third], of the length of segment; segment four shows posteriorly a semicircular, black, s ing spot, occupying the whole posterior margin and reaching bey the middle of the segment anteriorly; segment five [in the female the hypopygium in the male] black. Femora black, knees and ante half [or third] of the tibiæ brownish yellow; the remainder of the til as well as the tarsi, are darker [the first three joints of the tarsi in male are red]. Wings grayish hyaline; cross-veins and tip of sec vein with small brown clouds; stigma brown.

"One specimen, Vermejo River, New Mexico, June 25."

A single male specimen from Arizona (Mr. E. Keen) shows only important differences from the foregoing description of the female Osten Sacken. These differences are included in the brackets.

Volucella (Temnocera) pubescens.

Temnocera pubescens Loew, Wien. Ent. Monatschr., v, 38; Centur., vi, 35.

Habitat.—Cuba (Lw.).

♀. Length, 12.5mm. Black; the head, dorsum of thorax, up part of the pleuræ, and base of the abdomen, lutescent, antennæ s fuscous, wings cinereous-hyaline, the transverse veins wholly, the a iliary and the third longitudinal veins at their tips clouded with fusc

Head luteous, posterior orbits of the eyes white pollinose. Lo part of the face strongly produced, acuminate, thickly clothed with v short black pile. Antennæ subfuscous, upper margin of the third jc excised, arista black and black plumose. Proboscis elongate, bla Front on each side with an arcuate impressed line, black pilose, int mixed with sparse yellow pile. Thorax luteous; disk of the dors with three very broad, confluent, black stripes, very thickly cove with lutescent pile, on the lateral margins and behind sparsely provi with black bristles. Upper part of the pleuræ luteous and luteous bescent, below with the pectus black and black pubescent. Scutell inflated, not impressed before the tip, luteous on the disk with bl pile, on the margin with luteous, along the border with ten black b tles. Abdomen black, thickly black pubescent first and the greater p of the second segment luteous and luteous pubescent. Wings cinerec hyaline, base dilutely lutescent, second longitudinal vein at the strongly recurved, and, with the tip of the auxiliary, and the transve viens wholly, slenderly clouded with fuscous.—Translation.

The type specimens of this species are not contained in the Muse of Comparative Zoology.

Volucella (Temnocera) purpurascens.

Temnocera purpurascens Loew, Centur., viii, 52.

Habitat.—Hayti (Lw.)!

♀. Length, 13 to 16mm. Black, scutellu of the abdomen purplish, the r

steel-blue; head and dorsum of the thorax with pallid pile, on the rest of the body black; wings hyaline, with a large black median spot.

Head black, front and face, except the cheeks, yellow, occipital orbits whitish pollinose; pile of the front, of the face, of the eyes, and of the posterior orbits pallid; cheeks bare. Antennæ subfuscous, the first joint and the arista pitchy black. Thorax black shining; the dorsum with light yellowish pile, on the pleuræ and pectus black. Scutellum plane, purplish, or pitchy purplish, without bristles, clothed with black pile. Abdomen broad, somewhat flattened, shining, short black pilose; terminal segments of a deep steel-blue, or a purplish steel-blue, the anterior segments purplish. Venter deep steel-blue, short black pilose. Legs black, with short black pile; tibiæ, except the tip, red, near the immediate base infuscate. Head of the halteres white. Wings rather long, hyaline, with a large black spot, touching the middle of the costa and including the cross-veins; veins before this spot chiefly ochraceous-ferruginous, in the spot itself and on the outer part of the wing fuscous black, the costa itself and the first three longitudinal veins near the spot ochraceous-ferruginous.

Translation from the original, compared with the two type specimens in the Museum of Comparative Zoology at Cambridge.

Volucella apicalis.

Volucella apicalis Loew, Centur., vi, 36.

Habitat.—Cuba (Loew)!

♂. Length, 6.5mm. Yellowish-reddish, base of the abdomen lighter, the tip more obscure, very obsoletely roughened. Dorsum of thorax with scoriaceous stripes, ultimate joints of the tarsi black, apical half of the wings blackish clouded.

Head luteous, face much produced, shining, the antennæ of the same color, the third joint above lightly concave. Thorax yellowish-reddish, with four dorsal, scoriaceous stripes, pectus piceous. Abdomen yellowish-red, the first two segments (except the hind margin of the second) pallid, terminal segments obsoletely subscoriaceous. Legs saturate luteous; third joint of the front tarsi black fuscous, last two joints of all the tarsi black. Halteres white. Wings dilutely sublutescent, near the costa luteous, posterior margin clouded with cinereous, veins of the apical half broadly and indeterminately clouded with fuscous black, the clouds of the second, third, and fourth veins confluent.

Description translated from the original and compared with the type specimen in the Museum of Comparative Zoology.

Volucella chaetophora, n. sp.

Habitat.—Mexico!

♂. Length, 10mm. Face, yellow translucent, lightly pollinose on the [illegible]; not much produced downward, the nearly straight lower [illegible] cheeks forming an angle of about 100°–110° with the plane

of the occiput; in the middle of the face, with a prominent tubercle, shallowly concave below the antennæ. Third joint of the antennæ not very elongate, slender, broader at the base, not at all emarginate, yellow; arista densely plumose. Frontal triangle small, black, pilose in the middle. Dorsum of thorax shining cobalt blue, with sparse black pile. Scutellum cobalt blue, but showing a translucent reddish cast; on its border with six strong bristles. Abdomen brownish black, shining. Legs reddish black. Wings hyaline.

♀. Front narrowed above, black, with light pile. Abdomen with a subopaque cross-band on the posterior part of the second and third segments.

Two specimens, Isthmus of Tehuantepec (National Museum, Professor Riley's collection).

Volucella, n. sp.?

Habitat.—Mexico!

♂. Resembles the preceding closely, but the antennæ are darker, there is a black facial stripe, and a similar one on the cheeks, and the face is broadly pollinose on the sides. The second abdominal segment has a broad, luteous stripe on the sides, and the third segment has a narrow, broadly interrupted, cross-band of the same color. The wings are broadly brown on the outer part, especially in front. One specimen, with those of the preceding species.

ADDITIONAL NORTH AMERICAN SPECIES.

Volucella abdominalis Wiedemann, Auss. Zw. Ins., ii. 196, 2; Macquart, Dipt. Exot., ii, 2, 25, 8.—Cuba.

Volucella amethystina Bigot, Ann. Soc. Ent. de France, 1875, 479.—Mexico.

Volucella aperta Walker, Trans. Ent. Soc., N. Ser., v, 292.—Mexico.

Volucella castanea Bigot. Ann. Soc. Ent. de France, 1875, 476.—Mexico.

Volucella chalybescens Wiedemann, Auss. Zw., ii, 204.—Brazil; Jaennicke, Neue Exot. Dipt., p. 4.—Cuba.

Volucella fulvicornis Bigot, Ann. Soc. Ent. de France, 1883, 1884.—Panama.

Volucella lata Wiedemann, Auss. Zw. Ins., ii, 195.—Mexico.

Volucella mellea Jaennicke, Neue Exot. Dipt., 88.—Mexico.

Volucella nigrifacies Bigot, Ann. Soc. Ent. de France, 1875, 479.—Mexico.

Volucella picta Wiedemann, Auss. Zw. Ins., ii, 201; Bigot, in R. de la Sagra, etc., Brasil (W.), Cuba (Big.).

[illegible]hripes Bigot, Ann. Soc. Ent. de France, 1875, 480.—Mexico.

[illegible] Say, J. Acad. Phil. vi, 166, 2; Compl. Wr., ii, 360.—Mexico.

[illegible]a Bigot, Ann. Soc. Ent. de France, 1875, 477.—Mexico.

[illegible]oquart, Dipt. Exot. 1er Suppl., 123, 14.—Yucatan.

Bigot, Ann. Soc. Ent. France, 1875, 477.—Mexico.

[illegible]ot, Ann. Soc. Ent. de France, 1875, 482.—Mexico.

[illegible]a) unileota Walker, Trans. Ent. Soc. N. Ser. v, 292.—Mexico.

[illegible]t, Ann. Soc. Ent. de France, 1875, 481.—Mexico.

[illegible]ot, Ann. Soc. Ent. de France, 1875, 478.—Mexico.

[illegible]t, Ann. Soc. Ent. France, 1875, 481.—Mexico.

viridula Walker, Trans. Ent. Soc. N. Ser. v, 292.—Mexico.

[illegible], J. Acad. Phil., vi, 166, 1; Compl. Wr., ii, 360.—Mexico.

COPESTYLUM.*

Copestylum Macquart, Dipt. Exot. 1e Suppl., 124, 1846.

Wholly like some species of *Volucella* (e. g., *V. fasciata*, *V. satur*, etc.), except in the structure of the antennæ. Body short; abdomen short, broad, oval, fasciate; legs rather slender. Face produced directly downwards, obtusely conical below, pointed and notched at the tip, slightly tuberculate below the middle; front arched; antennæ situated near upper third of head in profile, slender, first joint very short, second joint a little elongate, third joint slender; arista inserted near the base, longer than the joint, thickened throughout its length, densely plumose with short, flattened, hair-like pile, appearing under a low-power glass like a solid mass, under a higher power (20–30 diameters) the arista shows a gradual thickening to near its end; the pile is fine near its insertion, but flattened beyond, in structure not unlike elongated scales from some lepidoptera. Eyes pilose, contiguous in male. Wings as in Volucella, marginal cell closed and petiolate, tip of fourth vein bent inward, small cross vein near middle of discal cell, oblique. Type of genus *C. marginatum* (Say) O. S., North America.

Copestylum marginatum. (Plate VII, figs. 1, 1*a*, 1*b*.)

Volucella marginata Say, Jour. Acad. Phil., vi, 167, 3; Compl. Wr., ii, 360; Osten Sacken, West. Dipt., 333.

Copestylum flavicentris Macquart, Dipt. Exot. 1e Suppl., 125; pl. x, fig. 16.

Copestylum marginatum Osten Sacken, Cat. Dipt., 130.

Habitat.—Mexico (Say), Venezuela (Macq.), Texas, Arizona, Montana, California!

♂, ♀. Length, 9 to 11^{mm}. Face whitish yellow, with a black median stripe, reaching from, or near, the base of the antennæ to the oral margin; cheeks black, shining, with a narrow yellow stripe running from the eye to the oral margin, sometimes the yellow predominates, leaving only a black stripe; antennæ varying from a light yellowish-red to quite black, second joint about one-third the length of the third joint. Frontal triangle black, shining, or with two oblong yellow spots near the orbit (var. *lentum*, name new), pile usually light-colored, sometimes black; front in female black on the upper half, on the sides below the yellow of the face sometimes extends up, partly cut off by an expansion from the black at the base of the antennæ; near the middle of the front are two small, oval spots, that are sometimes wanting, at other times confluent with the yellow of the sides. Thorax black, shining, with whitish pile, which is longer on the pleuræ; sides of dorsum with a stripe, entire or interrupted, and two spots in front of the scutellum, yellowish. In other specimens the pile is longer, mixed with black, or wholly black, and the yellow of the dorsum is entirely wanting (var. *lentum*). Scutellow, with white, blackish, or black pile. Abdomen black, with

* Κοπή, a striking, and στυλος, a style.

three interrupted bands; the first two pairs of spots large; the third narrow, either a light translucent yellow or an inconspicuous bluish; in some specimens the yellow becomes more or less confluent, so that the dorsum is chiefly yellow; venter wholly black, with a light yellow median transverse band, or wholly yellow, except the tip. Legs black; tibiæ on the proximal third yellowish, metatarsi and sometimes the second and third joints red; wings hyaline; stigma brownish.

Thirty specimens (Comstock, Coquillett, Morrison).

This species shows very great variation in color and markings. In isolated specimens one would scarcely consider the differences to be less than specific, but the variations are inconstant, and do not seem to be of more than varietal worth. Some specimens agree well with Macquart's description and figure, while others have still more yellow, as in Say's specimens. A very dark variety in which the thorax is clothed with black pile and wholly lacking the yellow of the sides and before the scutellum, the venter wholly without yellow and the antennæ black, may be distinguished as variety *lentum*.

In nine specimens from Montana (Professor Comstock) the size is distinctly smaller, the facial stripe is narrower and distinctly separated from the black at the base of the antennæ by a yellow interval, the frontal triangle is yellow along the eyes and the outer part of the second vein is less sinuous. These differences are possibly specific.

Copestylum limbipennis, n. sp.

Habitat.—Mexico!

♀. Length, 9mm. Face black, clothed with short, white pile, with two rather narrow yellow stripes, convergent below. Front black, with short, white pile, and a small yellow spot on each side near the middle. Antennæ brown, second joint red; third joint not twice the length of the second, not one-half as long as the arista; arista long, black, gradually and symmetrically widened from the base to near the tip. Eyes with short, not abundant, white pile; in the middle with an elongate, vertical stripe of black pile. Thorax shining black, with short, white pile; a small spot behind the humeri, a slender intra-alar vittula, and two small spots in front of the scutellum, yellow; the pleuræ with a small, vertical yellow spot on the meso-pleuræ. Scutellum yellowish brown, subtranslucent. Abdomen black; an oval, oblique spot on each side of the second segment, toward the front, a larger semi-oval spot on each side of the third segment in front, and the fourth segment almost wholly yellowish red or reddish yellow; venter black, with a pair of large oval spots on the posterior part of the second segment. Legs deep mahogany-black. Wings hyaline, broadly brown in front, the brown beginning gradually from near the origin of the second vein, and filling out uniformly the costal, subcostal, marginal, and all of the submarginal cells, and clouding the posterior margin of the third vein, the anterior

cross-vein, the distal part of the fourth vein, the posterior cross-vein, and the veins at outer end of the second basal cell.

A single specimen, Isthmus of Tehuantepec (National Museum, Professor Riley's collection). This specimen, although I have but the one for comparison, offers most excellent structural differences from *C. marginatum* in the antennæ, in the front being considerably narrower above, and in the slender pilose stripe of the eyes. The pile on the eyes of *marginatum* is black in the middle, but does not present the distinct vittulate appearance; it is also throughout much longer in *marginatum*. The broad, brown marking of the outer anterior part of the wings is conspicuously different. The coloration of the body and legs is probably variable. On either side of the base of the antennæ there is a small, yellow spot, and the cheeks show an indication of a yellow stripe.

SERICOMYIA.*

Sericomya Meigen in Illiger's Magaz., ii, 274, 1803.

Large, robust, thinly pilose species, black, with yellow interrupted fasciæ on the abdomen. Head hemispherical, somewhat flattened. Antennæ short, third joint rounded or subquadrate, arista feathery plumose. Face lightly excavated, or nearly straight below the antennæ, with a slight convexity near the middle, thence concave to the oral border, descending moderately below the eyes, in profile obtuse. Eyes bare, contiguous in the male. Abdomen elongate oval, broader than the thorax, gently arched, nearly twice as long as the thorax. Legs strong, hind femora sometimes somewhat thickened, hind tibiæ somewhat bent, at the tip sometimes with an angular protuberance. Marginal cell open, third vein slightly, sometimes considerably, curved, anterior cross-vein a little before or near the middle of the discal cell, a little oblique. Type of genus, *S. borealis* Fallen, Europe.

TABLE OF SPECIES.

1.—Black facial stripe very broad; bands of abdomen yellowish white (?) . **lappona**
Facial stripe moderately broad; bands of abdomen more yellow 2
2.—Second abdominal segment with two yellow dots, or wholly black; hind femora of male considerably thickened . . . . . **militaris**
Second abdominal segment with a median, interrupted fascia 3
3.—Yellow abdominal bands broadly interrupted, the spots more or less elongate hour-glass shaped. . . . . **sexfasciata**
The yellow bands narrowly interrupted, the spots not constricted 4
4.—Fourth segment (in the male at least) without yellow cross-band . . **bifasciata**
Fourth segment with cross-band like those of preceding segments 5
5.—Abdominal spots distinctly oblique . . . . . **chrysotoxoides**
Abdominal spots transverse . . . . . **chalcopyga**

* Σηρικός, silken, and μυια, a fly.

Sericomyia lappona.

Musca lappona Linné, Fauna suecica, 1794.

Syrphus lappona Fabricius, Spec. Ins., ii, 422, 4; Entom. Syst., iv, 280; Syst. Antl., 226, 7; Fallen, Syrph., 20, 8.

Sericomyia lappona Meigen, Syst. Beschr., iii, 344, 3; Macquart, Hist. Nat. Dipt., i, 496, 3; Zetterstedt, Ins. Lapp., 590, 2; id. Dipt. Scand., ii, 646, 4, viii, 3110; Walker, Ins. Brit., i, 263, 2; Schiner, Fauna Austr. Dipt., i, 330; v. d. Wulp, Tijdschr. v. Entom., xxv, 126.

? *Volucella lappona* O. Fabricius, Fauna Groenl., 208, 169.

Habitat.—Europe, Canada (v. d. Wulp.), Greenland ? (O. Fabr.).

♂, ♀. Length, 10 to 12mm. Black. Humeri white pollinose; pleuræ with a tuft of yellow pile; the pile elsewhere short, blackish brown or dark reddish yellow; scutellum yellowish red. The very narrow whitish yellow bands of the abdomen on the second, third, and fourth segments, narrowly interrupted, the last usually entire. Face black, on the sides broadly whitish yellow; front black; antennæ blackish brown, the third joint somewhat lighter. Legs dark reddish yellow, front femora at the base, and terminal joints of the tarsi, black. Wings at the base reddish yellow, on the anterior border grayish brownish, between the end of the marginal cell and the first posterior cell, sometimes a brownish spot.—Translation from Schiner, l. c.

This species is given on the authority of F. M. v. d. Wulp., who compared specimens collected in the vicinity of Quebec. He says: "Dat zij in Canada voorkomt, kann nu als zeker worden aangenomen." The synonymy is given from Schiner.

Sericomyia bifasciata, n. sp.

Habitat.—New Hampshire!

♂. Length, 11mm. Face yellow; cheeks and a broad median stripe shining black. Antennæ brownish red, third joint subquadrate; arista thinly plumose. Dorsum of thorax shining black, thinly dark pilose; on the inner side of each humerus with a spot of silvery pollen. Abdomen shining black; pile on the sides in front yellow; second and third segments each with a yellow cross-band, narrowly interrupted, and broadened on each side; fourth segment wholly shining metallic. Femora except the base, and the tip of tarsi, black; legs elsewhere reddish yellow, the tibiæ in the middle more luteous. Wings brownish in front, the base of the second vein and the middle cross-veins narrowly clouded with brown; third vein not at all curved into the first posterior cell.

Two specimens, Mt. Washington (Dr. Dimmock, National Museum, Professor Riley's collection). In one of these specimens the fourth abdominal segment is somewhat tubulate, in the other it is not differentiated and has less of the bronze lustre; in the same specimen the dorsum of the thorax shows a distinct blue reflection.

Sericomyia sexfasciata.

Sericomyia sexfasciata Walker, List, etc., iii, 595.

Habitat.—Hudson Bay Territory (Walk., Lw.)!

♂. Length, 14.5mm. Face light yellow, thickly whitish pollinose; a rather broad median stripe pitchy black; cheeks black. Antennæ obscurely yellow; the basal joints blackish; the third joint nearly square; frontal triangle black, white pollinose; pile of head light yellow. Dorsum of thorax shining metallic black; clothed with erect, rather abundant pile, in front and narrowly behind, and on the base and border of scutellum, yellow; across the disk of the dorsum and scutellum, black; pleuræ with light yellow pile. Abdomen black, nearly opaque, on the sides of the second segment, narrowly along the margins of the abdomen, and hypopygium, with yellow pile, elsewhere chiefly black pilose; second, third, and fourth segments each with a pair of yellow, elongate, moderately broad spots; the spots do not reach the lateral margins, and are rather broadly separated, and are most especially characterized by a constriction in the middle, especially on the front pair, where they are elongate hour-glass-shaped. Legs black; the base and tip of all the tibiæ, and the tarsi, except the tip, yellow; the tibiæ in the middle more of a deep brown. Wings yellowish hyaline, the immediate base and the stigma yellow; third vein with a gentle curvature into the first posterior cell.

One specimen, in the Loew type collection at Cambridge.

Sericomyia militaris. (Plate VII, figs. 3, 3*a*, 3*b*.)

Sericomyia militaris Walker, List., etc., iii, 595.

Habitat.—Hudson Bay Territory, Nova Scotia (Walk.), New York, New Hampshire, Colorado, New Mexico, Canada!, Red River.

♂. Length, 15mm. Face whitish yellow, shining; cheeks and broad median stripe black; pile whitish; face receding below the antennæ, then vertical and straight to the protuberance. Frontal triangle black; with black pile, white pollinose on the sides. Antennæ nearly black, third joint subquadrate, but little longer than wide; arista black. Orbit white dusted and with white pile. Thorax black, shining; the dorsum more bluish, clothed with rather abundant pile, darker between the wings; humeri whitish pollinose; on the upper part of the mesopleuræ, and immediately above the suture, with a tuft of whitish yellow pile, another smaller one on the post-alar callosity. Scutellum reddish black on the disk. Abdomen greenish black, somewhat shining, with black pile, whitish yellow on the lateral and posterior parts. Second segment with two small dots, sometimes wanting; third segment with two very narrow, a little oblique spots, acute at their outer ends; the fourth with two similar, a little broader, spots, yellow; the narrow posterior border of second, more broadly on the third, and the fourth wholly, metallic shining; hind margin of the third segment with a fringe of

whitish yellow pile. Femora black, their tip, the tibiæ, and first two or three joints of the tarsi, reddish yellow; terminal joints of all the tarsi black. Hind femora thickened, their coxæ with an obtuse tubercle. Wings faintly brownish, anterior basal portion luteous, outer part brownish; third vein somewhat arcuate, cross-vein near the middle of discal cell.

♀. Third joint of the antennæ a little larger; front black, with black pile, and a grayish dusted cross-band below the middle, slender in its middle part. The abdomen is wholly light yellowish pilose; the hind coxæ without a tubercle below, and the femora not thickened nor curved.

Six specimens, White Mountains, New Hampshire, July 15 (Dr. G. Dimmock), Canada (J. B. Caulfield, William Brodie), New York (Vanderzee), New Mexico (Gaumer).

This species in its thickened femora, partially obsolete abdominal cross-bands, and distinctly curved third longitudinal vein, connects this genus with *Arctophila*.

Sericomyia chalcopyga. (Plate VII, figs. 2, 2*a*.)

Sericomyia chalcopyga Loew, Centur., iii, 20.

Habitat.—Sitka (Lw.), Washington, Oregon!

♂, ♀. Length, 12 to 15mm. Front in female black, whitish pollinose on the sides below, clothed with black pile; frontal triangle black pilose. Antennæ reddish black or black, third joint subquadrate, scarcely longer than wide, a little broader at the end; arista blackish, twice as long as the joint. Face yellow, with whitish pile; broad median stripe and cheeks shining black; scarcely at all excavated below the antennæ. Occiput black; orbits yellowish white pollinose, and with similar colored pile, more or less black above. Thorax black, bluish shining, with blackish pile, more or less yellowish in front and behind; on the mesopleuræ with a yellow tuft, and just above the suture a smaller one. Scutellum more or less reddish on the disk; pile mostly black. Abdomen black, opaque, with short black pile, and with three narrow yellow fasciæ, nearly transverse, narrowly interrupted; second segment on its sides with yellow pile; third segment very narrowly shining on its posterior border; fourth segment broadly behind; fifth segment wholly, shining metallic green, clothed with longer reddish-yellow pile; the lateral margin of the abdomen with a fringe of similar reddish-yellow pile. All the femora slender; black at the base, or nearly entirely so; their outer half or tip, the tibiæ, and first two or three joints of the tarsi, reddish-yellow; terminal joints of all the tarsi black. Wings a little fuscous; in front as far as the cross-vein brownish yellow, beyond faintly blackish; the veins in the yellowish part are mostly yellowish or reddish; third vein very slightly concave, almost straight, cross-vein distinctly before the middle of discal cell, oblique.

Fifteen specimens.

Sericomyia chrysotoxoides. (Plate VII, figs. 4, 4*a*.)

Sericomyia chrysotoxoides Macquart, Dipt. Exot., ii, 2, 19, 1; pl. iii, fig. 3 bis. (male).

Sericomyia limbipennis Macquart, ibid., 2e Suppl. 58, 2 (female).

Sericomyia filia Walker, List, etc., iii, 596.

Habitat.—Atlantic States, Canada.

♂, ♀. Length, 10 to 12mm. Face shining, whitish pollinose on the sides; yellowish-white, with similar colored pile; cheeks and a median stripe (which is broadest in its middle, and scarcely reaches the antennæ), black; in profile considerably concave below the antennæ. Antennæ black; third joint about twice as long as broad, rounded on its outer angles; arista black. Front black, shining, opaque across the middle, on the sides below with yellowish-gray dust; pile black. Occiput black, whitish pollinose on the lateral orbits, and with white pile. Thorax black, shining; dorsum with two faint, median, slender, posteriorly abbreviated, opaque stripes; pile sparse, obscurely yellowish or blackish, on the sides with a tuft of yellow pile. Scutellum shining black; pile in large part yellow. Abdomen black, opaque, with the fasciæ more oblique, a little broader and more distinctly interrupted than in *S. chalcopyga;* second segment narrowly; third segment more broadly, and the fourth for nearly half its width on the posterior part; the fifth wholly, shining greenish-black; pile whitish-yellow on the sides in front, the lateral margins, and the posterior portion. Legs yellow; anterior and middle femora black on the basal half, the posterior pair either not at all or a spot near the middle in front; in the male all the femora except their end black, the last two joints of all the tarsi also black. Wings a little clouded on the inner part; in front yellowish-brown with yellowish veins; on the outer part from the first to the third veins blackish; cross-vein before the middle of the discal cell.

Twelve specimens.

The antennæ in the male have the third joint broader toward the end, whereas in the female it is a little narrowed. There can seem to be no doubt of the synonymy of *S. limbipennis*, described from a female, with *S. chrysotoxoides*, described from a male.

ARCTOPHILA.*

Arctophila Schiner, Wien. Entom. Monatschr., iv, 215, 1860; Fauna Austr., i, 331.

Large, thickly pilose species; black, but through the pile light in appearance. Very similar in structure to *Sericomyia*, but distinguishable by the thick pilosity, by the form of the face, which is straight, conical, descending much below the eyes, not truncate, but pointed at the tip; the abdomen is shorter, broader, and more convex above; the

*Ἄρκτος, bear, and φίλος, dear.

hind femora are thickened, and both the femora and the tibiæ are bent. Wings with a brownish spot; the third longitudinal vein considerably bent. Type of genus *A. bombiformis*, Europe.

Arctophila flagrans. (Plate VII, figs. 5, 5a, 5b.)

Arctophila flagrans Osten Sacken, Bull. Buff. Soc. Nat. Sci., iii, 69; West. Dipt., 235.

Habitat.—Colorado (O. S.), New Mexico!

♂. Length, 13mm. Face wax yellow. Cheeks black. Antennæ: basal joint brownish; third joint reddish, the plumose arista black. Thoracic dorsum densely clothed with yellowish hair, through which, however, the metallic, brownish, coppery, ground-color is apparent; pleuræ black, in the middle with a stripe formed by yellow pile. Abdomen with long yellow pile at the base and on the sides, with reddish hair in the middle and at the tip; between the hairs the black metallescent ground-color is apparent. Legs black; front tibiæ beset on the inside with short golden yellow hairs; three basal joints of the four posterior tarsi brownish-red. Wings with a slight grayish tinge; a brown spot limited by the fourth longitudinal vein, the costa, the small cross-vein, and the origin of the third vein; the latter vein is more deeply sinuate than in *A. bombiformis*.—Osten Sacken, l. c.

Seven male specimens from New Mexico (G. F. Gaumer, E. Keen) are sufficiently well described by the above. The species is easily recognizable.

ERISTALIS.*

Eristalis Latreille, Hist. Nat. des Crust. et Ins., xiv, 363, 1804.
Eristalinus Rondani, Dipt. Ital. Prodr., ii, 40, 1857.
Eristalomyia Rondani, ibid.

Moderate sized to large species, often more or less thickly pilose, frequently nearly bare, of a prevailing black or brownish-black color, usually with more or less yellow on the abdomen. Head hemispherical, but little broader than the thorax. Antennæ short, situated upon a slight convexity of the front, first two joints short, third joint oval; arista basal, bare, pubescent or loosely plumose. Face more or less pilose and pollinose, but slightly excavated in profile below the antennæ, straight, obtuse below, not produced, near the middle with a small prominence. Cheeks broad. Eyes more or less pilose, rarely nearly wholly bare, contiguous in the male, or at least only separated by a sutural space (in some exotic species separated by a distinct interval). Thorax large. Scutellum usually more or less translucent. Abdomen convex, elliptical, longer and broader than the thorax. Legs strong, the hind femora sometimes considerably thickened or dilated, the hind tibiæ more or less, sometimes considerably arcuated. Marginal cell of wing closed; third

*Eristalis, a precious stone.

longitudinal vein strongly bent into the first posterior cell; anterior cross-vein near the middle of discal cell, oblique.

1.—Scutellum of the same color as the thorax, abdomen without light markings, wholly shining; eyes bare (except on uppermost part) with small round dark spots; dorsum of thorax in female distinctly vittate; arista bare, **aeneus**

Scutellum more or less yellowish or reddish; eyes distinctly pilose, not so spotted 2

2.—Third segment of abdomen wholly shining, without opaque spots or bands . 3

Third abdominal segment with opaque markings 6

3.—Third joint of antennæ large, red; arista bare. Thinly pilose species; second segment of abdomen with reddish side spots and a shining cross-band; wings on the basal two-thirds in front brown . . . . . **compactus**

Third joint of antennæ of usual size; wings with or without brown . . . 4

4.—Pile of eyes not confined to a vertical stripe; the black of second abdominal segment, at least, in part opaque 17

Pile of eyes mostly confined to a vertical stripe; abdomen wholly shining; large species 5

5.—Honey-bee like in appearance; moderately pilose; base of tibiæ yellowish, posterior tarsi blackish; arista nearly bare . . . . . **tenax**

Humble-bee like in appearance; thorax and abdomen with thick long pile (on the dorsum of thorax sometimes blackish pilose, var. *melanostomus*); arista plumose, hind tarsi red . . . . . **flavipes**

6.—Thorax with one or more distinct light dusted bands; front in female narrow above 7

Thorax without such transverse bands 11

7.—Hind femora slender; frontal triangle, and front below (♀), with black pile . 8

Hind femora dilated or thickened 9

8.—Arista bare; yellow spots of second segment touching the front border in their whole extent . . . . . **atrimanus**

Arista briefly pilose; the opaque black extends nearly the whole width of the front border . . . . . **transversus**

9.—Third segment of abdomen with a shining cross-band; dorsum of thorax, besides the front border, with two complete light cross-bands; arista bare . 10

The black of the third abdominal segment wholly opaque; dorsum of thorax with one complete cross-band along the suture; frontal triangle thickly white pilose . . . . . **albiceps** ♂

10.—Second abdominal segment broadly opaque black in the middle; lower part of front not wholly white pilose . . . . . **albiceps** ♀

Second abdominal segment narrowly black in the middle; pile of lower part of the front, or the frontal triangle, wholly white . . . . . **vinetorum**

11.—Thickly pilose species 19

Moderately pilose species 12

12.—Third abdominal segment with a posterior velvety black cross-band not interrupted in the middle 13

Third abdominal segment with an interrupted band, or none 16

13.—Third segment of abdomen broadly and conspicuously yellow on the sides, joining the yellow of the second segment, the black of the second segment wholly opaque, not extending outwards on the sides behind; the third segment with an opaque spot in front, and an abbreviated cross-band behind; fourth segment metallic; eyes briefly contiguous in male . . . . **Brousi**

Third segment not conspicuously yellow, the posterior opaque fascia of second segment behind reaching toward the lateral margin; eyes broadly contiguous in male 14

14.—Front of female narrow. Deep bluish black; scutellum but very little lighter; second segment of abdomen with inconspicuous side spots; third and fourth segments with a narrow anterior velvety fascia . . . . . **saxorum**

Front of female broad; dorsum of thorax not shining steel-blue **15**

15.—Lighter markings of abdomen usually quite distinct; third and fourth segments with a small, elongate, opaque black spot in front . . . . . **hirtus**

Light markings obsolete, third and fourth segments without opaque anterior spot . . . . . { **obscurus** / **inornatus**

16.—Third segment of abdomen with an anterior spot and a posterior, opaque cross-band; the opaque of second segment with a small triangular shining spot behind; fourth segment with an oval spot in front . . . . **dimidiatus**

Third segment with one or two small opaque spots only, without posterior cross-band; or wholly shining **17**

17.—Wings conspicuously dark colored on the outer part in front; hind femora thickened . . . . . **hortorum**

Wings hyaline, femora not thickened **18**

18.—Second segment of abdomen with yellow lateral triangles and a posterior, interrupted or subinterrupted velvety cross-band; posterior margin of segments 2–4 yellowish white with a fringe of pale golden pile . . . . **latifrons**

Second segment, except the obsolete or metallic side spots, which extend the whole length of the segment, velvety black; third usually with a velvety triangle in front, the fourth with a similar, but very small one; the yellowish white hind borders fringed less conspicuously with light colored pile . . . . . **Brousi**

19.—Second, third, and fourth segments of abdomen broadly reddish yellow on the sides, leaving a narrow black stripe, which is wholly opaque on the second segment, and in front, at least, on the third segment; eyes narrowly separated (♂) . . . . . **montanus**

Second, third, and fourth segments not broadly yellow on the sides . . . **20**

20.—Third segment with two opaque circular spots near the middle of the segment, **pilosus**

Third segment with a posterior opaque cross-band **21**

21.—Posterior opaque cross-band of third segment narrow; fourth segment usually with a small opaque spot in front . . . . . **occidentalis**

Posterior cross-band broad; fourth segment wholly shining; more thickly pilose species . . . . . **Bastardi**

For other species, see descriptions.

Eristalis tenax. (Plate VII, figs. 7, 7*a*, 7*b*, 7*c*.)

Musca tenax Linné, Fauna Suecica, 1799 (1761).

Musca porcina Degeer, Ins., vi, 45, 1.

Conops vulgaris Scopoli, Entom. Carn., 354, 960.

Conops fuscus Scopoli, l. c., 355, 961.

Elophilus tenax Latreille, Gen. Crust., iv, 324.

Syrphus tenax Fabricius, Spec. Insect., ii, 425; id. Entom. Syst., iv, 268, 36; Fallen, Syrph., 26, 17; Zetterstedt, Dipt. Scand., ii, 661, 7; id. ibid., viii, 3113, 7.

Eristalis tenax Fabricius, Syst. Antl., 238, 24; Meigen, Syst. Beschr. iii, 385, 4; Macquart, Hist. Nat. Dipt., 1, 504, 21; Schiner, Fauna Austr., i, 334; Burgess, Psyche.

Habitat.—Europe, Asia, Africa (Auct.), North America, Japan!

♂, ♀. Length, 12 to 14mm. Eyes with dark pile, more abundant near the middle, in the form of an elongated vertical stripe or ellipse, the

middle of which is less pilose. Face and front mostly concealed beneath dense yellowish pollen and similar-colored pile; a broad median facial stripe and the cheeks shining black; the upper part of the front in the female and a spot above the antennæ in both sexes black, with black pile. Antennæ brownish black; arista reddish, darker at the base, nearly bare. Thorax black, but little shining; dorsum covered with yellowish pollen and moderately abundant yellow pile. Abdomen brownish black, nearly bare, wholly shining; the second segment, and sometimes the third, with narrow posterior reddish margins; the usual triangle slender, inconspicuous, obscurely reddish yellow; third segment sometimes with a similar, small, less distinct spot on the sides. Legs brownish black, or black, with yellow pile; tip of femora and basal third of anterior and middle tibiæ light yellow, the distal portion of these tibiæ and all of the hind tibiæ blackish or brownish; middle metatarsi yellow. Wings hyaline, a small spot at tip of auxiliary vein; the disk sometimes broadly but faintly clouded.

Numerous specimens.

The most remarkable thing in connection with this insect is the date of its first discovery in America. Prior to 1874 or 1875 the species had never been recognized by dipterologists, although such an able collector as Baron Osten Sacken had spent many years in the study of our dipterous fauna. At present it is very abundant in New England, and I have seen specimens from the Central and Pacific States. In Professor Riley's collection, however, there is a specimen bearing the date of 1870, and presumably captured in the Western States somewhere. Upon calling this gentleman's attention to the specimen he assured me that the species had long been familiar to him about privies and out-houses, where they are known to breed. It seems probable to me that the species has been in this country for many years, but had never been recognized.

Eristalis æneus.

Syrphus æneus Fabricius, Ent. Syst., iv, 302,88; Fallen, Syrph., 28, 22; Panzer, Fauna Germ., 82, 15; Zetterstedt, Dipt. Scand., ii, 668, 14.

Conops æneus Scopoli, Ent. Carn., 356, fig. 967.

Eristalis æneus Fabricius, Syst. Antl., 244, 57; Meigen, Syst., Beschr, iii, 384, 2; Macquart, Hist. Nat. Dipt., i, 506, 16; Schiner, Fauna Austr. Dipt., i, 333.

Eristalis cuprovittatus Wiedemann, Auss. Zw. Ins., ii, 190, 54.

Eristalis sincerus Harris, Ins. Injur. to Veget., 3rd ed., 609; Walker, List, iii, 611.

Habitat.—Europe, North America!, Algiers, Canary Islands, Malta, Syria.

♂, ♀. Length 8 to 10mm. Dark metallic green, wholly shining. Eyes spotted with small round dots, nearly bare, very slightly pilose near the top. Face and front with grayish pile and pollen, a small spot on the tubercle and the cheeks narrowly shining. Antennæ brown; the third joint yellowish, often the first two joints likewise; arista bare. Thorax and abdomen with obscure yellowish pile. Dorsum of the thorax in the female with five grayish-white stripes, the middle one slender, linear. Scutellum of the same dark metallic green. Tibiæ at the base, some-

times for nearly half their length, light yellow; middle, sometimes all the metatarsi, yellowish; the femora, except the tip, black; distal portion of tibiæ blackish brown. Wings hyaline.

Numerous specimens.

Eristalis hirtus.

Eristalis hirtus Loew, Centur., vi, 66; Osten Sacken, West. Dipt., 335; Williston, Proc. Am. Phil. Soc., 1882, 319.

Eristalis temporalis Thomson, Dipt. Eug. Resa, 490, 77.

Habitat.—Washington, Oregon, California, Colorado, Western Kansas!

♂, ♀. Length, 10 to 15mm. Face black, more or less concealed beneath a sometimes dense grayish or reddish pollen, the pile whitish. A narrow stripe in the middle and the cheeks bare, shining. Below the antennal process the face is nearly vertical to the tip of the tubercle. Frontal triangle convex, with obscure yellowish pile. Eyes in the male broadly contiguous; in the female the front is convex and very broad, the sides converging but very slightly on the upper half; thickly yellowish pollinose, less dense in the middle and upper part, so that the shining ground color appears; thickly clothed with yellowish pile. Antennæ black; arista reddish, briefly pilose near the base. Thorax black, shining, rather thickly clothed with the same obscure yellowish pile. Scutellum sub-translucent yellow, black at the base. Abdomen black; the sides of the second segment with a large triangular spot, usually yellowish, sometimes quite yellow, in others only metallic; the segment elsewhere opaque; third segment with an opaque black fascia behind, not interrupted, and a small triangular spot in front; remainder of the third, and the following segments, shining black, except that the fourth segment usually has a very small triangular opaque spot in front; pile short, obscure yellowish, black on the opaque portions; second, third, and fourth segments usually margined behind with light yellow, in some specimens almost wholly wanting. Legs black; tip of femora and base of tibiæ, the middle tibiæ almost wholly, and the first two joints of the middle tarsi, yellow. Wings hyaline; in some specimens with a large faint brownish spot in the middle of the wing. Thirty specimens.

This species varies much in the yellow coloration of the abdomen. According to Osten Sacken, the specimens with obsolete and sub-obsolete yellow spots on the sides of the second segment seem to come from higher altitudes.

Eristalis dimidiatus.

Eristalis dimidiatus Wiedemann, Auss. Zw. Ins., ii, 180, 41.

Eristalis inflexus Walker, List., etc., iii, 617.

Eristalis niger Macquart, Hist. Nat. Dipt., i, 505, 15.

Eristalis L'Herminierii Macquart, Dipt. Exot., ii, 2, 55, 38 (male).

Eristalis chalybeus Macquart, Dipt. Exot., ii, 2, 55, 39 (female).

Eristalis incisuralis Macquart, Dipt. Exot., 4e Suppl., 139, 64 (male).

Habitat.—Atlantic States, Kansas!

♂, ♀. Length, 10 to 13mm. Face densely clothed with whitish pollen and pile, when denuded the ground color somewhat reddish, in the middle with a large oval shining spot on the tubercle, and the cheeks also, shining black; in profile concave below the antennæ, the tubercle large. Antennæ black, the third joint a little brownish or reddish; arista reddish, very briefly pilose near the base. Front in female clothed with yellowish-whitish pollen and pile, leaving a median stripe brown; on the upper part a small vittula in the middle, a larger oval spot near the eyes, and the ocellar spot, black with black pile. Eyes pilose on the upper part; frontal triangle not much longer than the suture between the male's eyes, a little shining in the middle. Thorax with short, not abundant, light colored pile; shining greenish black with two or three indistinct, somewhat opaque stripes. Scutellum yellowish; pile mostly blackish above, yellowish on the border. Pleuræ with more abundant yellowish pile. Abdomen shining greenish black; the usual triangular spots on the second segment sometimes yellowish, usually metallic shining, not contiguous in the middle, elsewhere the color is opaque velvety black with a shining metallic spot in the middle behind; third segment with three opaque spots, an elongate one on each side behind, and an oval median one in front, sometimes there is a yellowish spot on the sides; fourth segment with an oval median opaque spot in front; hind margin of the second, third, and fourth segments yellow, sometimes nearly obsolete; pile very short, on the first segment longer, whitish, on the opaque portion black, elsewhere more yellowish. Legs black; basal portion of all the tibiæ yellowish white. Wings hyaline, small stigmatic spot brown, a brownish tint often near the middle of the wing.

Fifteen specimens, Connecticut, District of Columbia (Patton), White Mountains (Dimmock, 1447), Kansas.

About the synonymy of *L'Herminieri* and *chalybeus* there can be no doubt, the descriptions agree perfectly, and Osten Sacken, who examined the types, pronounced them to be the same. *E. niger* and *incisuralis* of the same author differ only in that the opaque spots of the third abdominal segment are not mentioned; nevertheless, the synonymy is not doubtful.

Eristalis saxorum.

Eristalis saxorum Wiedemann, Auss. Zw. Ins., ii, 158; Macquart, Dipt. Exot., ii, 2, 33, 5.

Eristalis pervagus Walker (Harris), List, etc., iii, 618.

Habitat.—Massachusetts, Connecticut, North Carolina, Pennsylvania! Georgia.

♂, ♀. Length 10 to 13mm. Resembles *dimidiatus*, but is at once distinguishable by the third segment of the abdomen having an entire posterior, velvety cross-band, by the front in the female being narrowed above, and by the presence of a distinct brown spot on the wings.

Face concealed beneath dense whitish or yellowish pollen and whitish pile, concave below the antennæ; a large oval spot connected with the narrow oral margin, and the cheeks, shining black. Front in female distinctly narrowed toward the vertex, at the narrowest part only a little more than half as wide as at the base of the antennæ; in well-preserved specimens dusted on the sides, more lightly in the middle, leaving the vertex and just above the antennæ shining, in the middle a slender brown stripe and above on each side an oval black spot; pile above blackish, below whitish. Frontal triangle with longer yellowish pile; shining in the middle. Eyes nearly bare, the pile being short and confined to the upper part. Antennæ brownish black, third joint somewhat reddish; arista red, briefly pilose toward the base. Thorax a deep blue black, shining; pile light yellowish, short, not abundant, but more so on the pleuræ. Scutellum scarcely reddish above. Abdomen shining bluish black; the second segment on the sides sometimes yellowish, and in the same specimens similar, but more faintly colored spots on the sides of the third segment; the shining fascia of the second segment interrupted in the male, entire in the female, in front narrowly, behind broadly opaque black, without a shining triangular spot; third segment very narrowly in front, more broadly behind with entire velvety fasciæ; fourth segment with a black fascia behind; fifth segment in female and the hypopygium in male wholly shining; the second, third, and fourth segments very narrowly yellow behind. Legs black; the base of hind femora in the female and sometimes so in the male, the basal half of anterior and posterior tibiæ, rather more than half of the middle tibiæ, and the basal joints of the middle tarsi, yellow. Wings hyaline, the immediate base, and a large spot near the middle covering the cross-veins, brown; in some specimens the brown of the middle is confined to a narrow fascia across the base of the discal cell and origin of the third vein.

Thirty specimens.

Eristalis latifrons.

Eristalis latifrons Loew, Centur., vi, 65.

Eristalis stipator Osten Sacken, West. Dipt., 336; Williston, Proc. Am. Phil. Soc., xx, 319.

Habitat.—California, Kansas, Arizona, Colorado, New Mexico, Texas!

♂, ♀. Length, 9 to 14mm. Face a little concave below the antennæ, concealed beneath dense yellowish-white pollen, and the pile of the same color; in the middle with a rather broad shining bare stripe; the cheeks also bare and shining black. Antennæ black, third joint brownish-black; arista reddish yellow, bare. Eyes pilose, contiguous in the male, the suture between them rather short (about half as long as the interval between the apex of the frontal triangle and the root of the antennæ); front in female rather broad, the sides a little convergent above, grayish pollinose, beset with dense grayish-white pile, shining along

the middle, especially below, the vertex darker. Thorax greenish-black, unicolorous, shining, beset with yellow or yellowish pile, sometimes more orange-colored, denser on the pleuræ. Scutellum reddish-brown, translucent; second abdominal segment with a yellow triangle of the usual shape on each side, sometimes brownish-yellow; an opaque black cross band on the anterior margin, another one along the posterior side of the yellow triangles; the latter is interrupted or subinterrupted in the middle, oblique on each side, and not reaching the lateral margins; a smooth bluish-black space is inclosed between the two cross-bands and the triangles; a narrow shining triangular space between the hind cross-band and the yellowish-white posterior margin of the segment, which bears a fringe of pale golden-yellow pile; the third and fourth segments have the same pale-yellowish posterior margin and fringe of pale-golden pile; on the fourth segment, however, the fringe is broader, and takes in the whole posterior half of the segment; on the posterior half of the third segment there is on each side in the male usually an elongated opaque black streak; the anterior margin of the third segment has a narrow pale border, as if prolonging the hind margin of the preceding segment. Hypopygium black. Legs black; tip of the femora and basal half of the tibiæ yellowish-white; on the middle pair three-fourths of the tibiæ and the base of the tarsi are of a pale color. Wings hyaline; stigma small, brown.

Six specimens from California (Morrison), the male of which lacks the velvety lateral spots on the third segment; a single male from Western Kansas and a female from Topeka, Kans. (Popenoe); also, seven males and three females from Colorado and five from Arizona (Professor Comstock). Since writing the above I have found the species very abundant on the Kansas plains in August.

Eristalis Brousi.

Eristalis Androclus Osten Sacken (not Walker), West. Dipt., 337; Cat. Dipt., note 223, p. 249.

Eristalis? Meigenii (Wied.) Williston, Proc. Am. Phil. Soc., 319 (male).

Eristalis Brousii Williston, ibid., 323 (female).

Habitat.—Canada, New England, Washington Territory!, Utah, Alaska (O. S.).

♂, ♀. Length, 10 to 12^{mm}. Face black, shining, thickly clothed with yellow pollen and pile, leaving the tubercle, the oral margin, and the cheeks shining black. Frontal triangle a little shining along the middle; in the female the front reddish pollinose, more shining above the antennæ. Antennæ black, third joint somewhat reddish; arista reddish, briefly pilose near the base. Eyes pilose, in the male contiguous for a short distance only; posterior lateral orbits white-pollinose. Thorax black, shining, on the dorsum with a coppery luster, leaving two opaque, lighter colored, rather broad stripes, reaching from the front to the scutellum, limited by three narrow, opaque, black stripes; pile of dor-

sum light reddish yellowish, scarcely apparent from above; pile of the pleuræ whitish. Scutellum subtranslucent yellowish or reddish on the outer part. Abdomen in the male as follows: first segment black; second segment orange-yellow, broadly on the sides and narrowly across on the hind border, elsewhere opaque black; on the posterior part the black includes nearly a third of the width of the segment; the sides approach each other a little towards the front and then at nearly right angles extend outward along the anterior margin of the segment; the lateral prolongations are convex on their hind borders and reach acutely nearly to the lateral margins; third segment with large, similar colored spots, confluent with the yellow in front, but rounded on the internal posterior angles and usually not quite reaching the yellow of the hind margins; across the middle of the segment a shining metallic band interrupted in the middle, elsewhere the black is opaque; fourth segment wholly shining, with a narrow yellow hind margin and sometimes with a small spot of opaque black in front; hypopygium shining black. In the female the markings are rarely like those of the male, chiefly shining black; the second segment sometimes with a small reddish spot on the side, the opaque marking as in the male; the third and fourth segments sometimes with a small opaque spot in front; second, third, and fourth segments sometimes rather broadly whitish pollinose on the hind border; the hind margins more narrowly reddish-yellow. Legs black, a little stout; tip of femora and base of tibiæ reddish or whitish yellow. Wings hyaline; stigma minutely brownish; in the female with a large faint brownish spot.

Twelve male and six female specimens from Connecticut and an equal number from New York and Pennsylvania; also one male from Toronto (Brodie) and one from Washington Territory (Professor Hagen).

This species is remarkably like *E. arbustorum* from Europe in size, shape, and coloration, but a careful examination discloses differences which are evidently specific. With *E. Meigenii* Wied. (Auss. Zw. Ins., ii 177; pl. xv, fig. 15), from South America, the resemblance must be even greater; the full descirption applies almost perfectly.

Osten Sacken observes that the specimens from Yukon River, Alaska have the arista dark and the velvety spots on the abdomen somewhat different.

Eristalis montanus.

Eristalis montanus Williston, Proc. Am. Phil. Soc., xx, 322.

Habitat.—Wyoming!

♂. Length, 11 to 12mm. Face reddish-yellow pollinose, and white pilose, on the sides; the median stripe and broadly on the cheeks shining black. Frontal triangle black in the middle, with yellowish pile. Antennæ black; arista reddish, pubescent near the base. Eyes wholly pilose; approaching each other in front of the ocelli, but not quite con-

tiguous. Face distinctly concave below the antennæ. Thorax clothed with long and dense sulphur-yellow pile; from above, the ground color appears black. Scutellum wholly yellow, densely yellow pilose. Abdomen with abundant, long, reddish-yellow pile; first segment black, second segment broadly shining reddish-yellow, in the middle opaque black, the black is broad in front, behind it occupies less than a fourth of the width of the segment; third segment of the same reddish-yellow color, shining; the median broad black stripe, continuous with the black of the second segment, is opaque in front, shining behind; fourth segment similar to the third, but the black wholly shining; hypopygium shining black. Legs black, with black pile; tibiæ yellowish at the base. Wings nearly hyaline; stigmatic spot dark brown; a broad, distinct, brownish spot in the middle of the wing.

One specimen, Como, Wyoming, altitude 7,000 feet.

It is probable that the amount of yellow on the abdomen may vary, especially on the third and fourth segments.

Eristalis occidentalis.

Eristalis occidentalis Williston, Proc. Am. Phil. Soc., xx, 322.

Habitat.—Washington Territory!

♂, ♀. Length, 10 to 12^{mm}. Allied to *Bastardi* and *montanus*. Face clothed with reddish-yellow pile and pollen, not at all concave below the antennal process; median stripe and cheeks bare, shining black. Antennæ black; arista red, pubescent near the base. Eyes pilose; contiguous for a short distance (♂). Front in the female a little narrowed above; thickly yellowish pollinose and with abundant yellow pile, near the vertex black. Thorax opaque black, with long yellow pile, apparently more abundant in the male, but not concealing the ground color when seen from above; in the female on the front part in the middle with two narrow grayish stripes, abbreviated posteriorly. Scutellum yellow, with more abundant yellow pile. Abdomen black, with abundant, rather long, yellow pile; first segment black; second broadly yellow on the sides, the black opaque portion broadly along the front margin, a third of the width of the segment behind; third segment yellow on the sides, with a shining interrupted transverse fascia, the black elsewhere opaque; fourth segment shining black with a small opaque spot in front, sometimes reddish on the sides in front; second, third, and fourth segments with a narrow yellow hind margin. In the female the yellow is apparently less extensive; on the second segment forming large triangular spots; on the third nearly or quite wanting, the shining fascia entire. Legs black; base of all the tibiæ whitish-yellow, the first two joints of the middle tarsi yellowish. Wings hyaline; a distinct brownish spot at the middle.

Six specimens, Washington Territory.

This species is evidently variable in the abdominal markings. It must be allied to *pilosus* from Greenland, though certainly different.

Eristalis Bast[illegible]

Eristalis [illegible]dii Macquart, Dipt. Exot., ii, 2, 35, 7; pl. ix, fig. 1.
Eristalis [illegible]tallicus Macquart, Dipt. Exot., 4e suppl., 140, 65.
Eristalis [illegible]us Walker, List, etc., iii, 616.

Habitat.—New England, Canada, Labrador!

♂, ♀. Length, 11 to 12mm. Eyes pilose, contiguous in the male. Face and front concealed beneath reddish-yellow pollen and yellow pile, the facial stripe and cheeks shining black. Vertex with black pile. Antennæ black; arista shortly and thinly pilose. Thorax with abundant bright yellow pile, sparser across the disk, where it is sometimes mixed with black; the deep opaque black ground color is apparent from above in large part. Scutellum light yellow, with pile like that of the thoracic dorsum. Abdomen: first segment black with yellow pile; second segment on the sides with a rather small red spot, sometimes obscure and not quite reaching the lateral margin; clothed on the sides with yellow pile; the black wholly opaque with thick black pile, often more or less intermixed with yellow. Third segment usually wholly black, but in some northern specimens broadly red on the sides, across the middle with a shining fascia, in front and behind opaque, but not readily perceived, owing to the dense black pile, which is not infrequently intermixed more or less with yellow, especially on the sides; remainder of the abdomen wholly bright shining, usually clothed with longer yellow pile, but sometimes the yellow is mainly confined to the sides. Legs black with black pile; basal portion of all the tibiæ yellow. Wings hyaline with a large brown spot in both sexes, sometimes rather faint. Numerous specimens.

A common species in the New England States. Osten Sacken gives the synonymy of *nebulosus* from an examination of the type. The type of *semimetallicus* he also examined and believed it to be the same; though it might possibly be an allied species. Macquart's description certainly applies closely to some individuals, and it seems to me that it is unquestionably a *Bastardi*.

Eristalis flavipes.

Eristalis flavipes Walker, List, etc., iii, 633.
Eristalis melanostomus Loew, Centur., vi, 69.
Milesia barda Say, J. Acad. Phil., vi, 163; Compl. Wr., ii, 357 (female).

Habitat.—Canada, New England, Washington Territory!, Minnesota (Loew).

♂, ♀. Length, 13 to 17mm. Large, shining, robust, black, thickly pilose. Face and cheeks shining black, a little yellowish dusted near the antennæ, on the sides very sparsely whitish pilose. Eyes broadly contiguous in the male, their pile chiefly confined to a dense vertical stripe. Frontal triangle yellow pollinose and with abundant yellow pile; in the female the front is broad above, thickly reddish-yellow pollinose and with abundant yellow pile, above the base of the antennæ somewhat shining. Antennæ brownish-black, often somewhat reddish, arista thin-

mose on the basal portion. Dorsum of thorax, pleuræ, and scutel- with very abundant and long bright yellow pile, less abundant on isk of the dorsum, where the deep black ground color is apparent, he pile also frequently more or less intermixed with black, some- broadly and conspicuously black (var. *melanostomus* Lw.). Scutel- wholly light yellow. Abdomen deep black, everywhere shining; ch side of the middle of the second segment frequently the ground is deep reddish; pile dense, in color black and yellow variable, lly on the first segment, and more or less on the second, longer w; sometimes the yellow, with a reddish cast, covers the entire men except the tip, the fifth segment usually yellow pilose. Legs black, with black pile; knees reddish, anterior tarsi brown, middle posterior pairs conspicuously light reddish-yellow, except their tip, femora somewhat elongate, hind tibiæ bent. Wings hyaline, veins us, in the female with a large brown spot.

very common and fine species, in appearance strikingly resembling *ota posticata*. Thirty specimens.

alis compactus. (Plate VII, fig. 9.)
Eristalis compactus Walker, List, etc., iii, 619.
Eristalis atriceps Loew, Centur., vi, 64.

abitat.—Hudson Bay Territory (Walk.), White Mountains, Canada), Connecticut!

♀. Length, 9 to 10mm. Black, shining. Face on the sides lightly ed with whitish pollen and thin whitish pile. Front in female w pilose below; on the sides lightly pollinose above, clothed with pile. Antennæ red, third joint unusually large; arista bare. wholly lightly pilose. Dorsum of thorax shining, with reddish the sides, more obscure in the middle. Pleuræ mostly black scutellum ish red with black pile, along the border the reddish. egment of the abdomen on the sides with the riangle ownish red, and, extending across between, a fascia upted in the middle, the black elsewhere deep hind low; third segment and also the fourth, except r, wholly shining, the posterior part of the third distinctly so, subopaque; hypopygium, or fifth ng. Pile on the sides of the segments reddish, rgins on the front part of the segments whitish, and abdomen intermixed with light-colored pile, on the rt, thick, black. Venter black, shining, with long, posterior margins of the segments whitish. Legs red- , hind femora not thickened, basal part of femora and of tarsi black, the distal end of anterior and posterior brownish, the tibiæ at the base yellow. Wings hyaline, anterior part as far as the cross-vein, and reaching a of the second basal cell, brown.

A single specimen, taken June 15 in Connecticut, agrees quite w Loew's description, except that the femora are in a greater degree reddi In Walker's specimen that he described, the legs were wholly ferrug ous, except the tip of tarsi. The color of the femora is evidently varial and I have no doubt that the present is, as Baron Osten Sacken s pected, Walker's species. The species will be easily recognized by t blackish marking along the fore border of the wing.

Eristalis transversus. (Plate VII, fig. 8.)

Eristalis transversus Wiedemann, Auss. Zw. Ins., ii, 188, 51.
Eristalis philadelphicus Macquart, Dipt. Exot., ii, 2, 34, 6; pl. viii, fig. 4.
Eristalis pumilus Macquart, Dipt. Exot., ii, 2, 57, 43.
Eristalis vittatus Macquart, Hist. Nat. Dipt., i, 307, 19.
Eristalis zonatus Bigot, Ann. Soc. Ent. France, 1880, 217.

Habitat.—Atlantic States!

♂,♀. Length, 7 to 12mm. Eyes pilose on upper half, broadly conti uous in the male. Frontal triangle black, shining in the middle, pol nose on the sides, the pile black; front in female with black pile, n rowed above, on the lower two-thirds reddish pollinose, just above t base of the antennæ shining black, around the ocelli also somewh pollinose, below the ocelli velvety black, extending downwards in three points, one along each eye and one in the middle. Antenn reddish yellow, the first two joints and the upper part of the thi often brownish or blackish; arista reddish, the basal portion spars plumose. Face concealed on the sides beneath dense whitish pollen a whitish pile, the median stripe and cheeks shining black. Dorsum thorax opaque black, with three grayish olivaceous transverse ban the first along the front border, the second just before the suture, t third midway between this and the scutellum; pile not at all abunda lutescent, on the pleuræ more abundant, yellow. Scutellum bri yellow, along its base narrowly black. Abdomen in the male as lows: first segment black; second segment with large lateral triangl and narrow posterior border, bright yellow, elsewhere wholly opa black, extending narrowly to the lateral margins; third segment w a large quadrilateral spot on each side in front, and posterior bord yellow, the black is opaque, except a narrow shining cross-band t cuts off a small opaque spot in front; fourth segment with a small y low spot on each anterior angle, and a posterior yellow border, broa than on the preceding, remainder of the segment opaque black with entire shining cross-band before the middle of the segment; hypop ium shining black. In the female the lateral spots of the second s ment are smaller, the second, third, fourth, and fifth segments wit narrow yellow hind border and an entire, or subinterrupted shin cross-band on the anterior part of each segment; on the third a fourth segments sometimes with a small yellow spot on the sides front. Legs variable; usually black with the tip of femora and b of tibiæ yellow; at other times the distal half of all the femora and t

ase of hind tibiæ, femora, and the larger portion of the tarsi yellow; nore rarely the front and middle legs may be almost wholly yellow and he black confined to outer part of hind femora, tip of hind tibiæ, and ip of all the tarsi. Wings hyaline, the basal portion a little yellowish.

I have examined a large number of specimens of this species collected nostly in New England, and believe the synonyms as given to be correct. Small specimens corresponding to *pumilus* were taken late in October, nd, upon first sight, certainly seemed a different species, but a further tudy showed the impracticability of separating them from the more ypical *transversus*. Altogether I have examined about 75 specimens, collected from Canada to Florida.

Eristalis vinetorum. (Plate VII, fig. 8*a*.)

Syrphus vinetorum Fabricius, Ent. Syst., Suppl., 562.
Eristalis vinetorum Fabricius, Syst. Antl., 235, 13; Wiedemann, Auss. Zw. Ins., ii, 163, 15; Macquart Dipt. Exot., ii, 2, 41, 16.
Eristalis trifasciatus Say, J. Acad. Phil., vi, 165; Compl. Wr., ii, 359.
Eristalis uvarum Walker, List, etc., iii, 623.
Eristalis thoracicus Jaennicke, Neue Exot. Dipt., 91.

Habitat.—Cuba, Florida, Georgia, Mexico!, Indiana (Say), Pennsylvania (O. S.), Brazil (Schiner).

♂,♀. Length, 11 to 14^{mm}. Antennæ reddish-yellow; arista bare. Face eddish-yellow; on the sides with whitish pollen and pile; the median tripe and cheeks shining, more or less brownish. Frontal triangle, like he face, clothed wholly with white pile; front in female narrow above, nore yellowish than the face, in the middle with a brownish stripe; bove with blackish pile near the ocelli, below yellowish-white. Dorsum f thorax opaque black, with three distinct grayish-olivaceous fasciæ, he first on the front border, the second just before the suture, and the hird, the broadest, just in front of the scutellum, the intervals between hem crescentric; pile short, yellowish; pleuræ grayish pollinose. Scutellum reddish-yellow, lighter along its border. Abdomen in the male s follows: first segment black, on the sides reddish-yellow; second segment with large lateral spots, not reaching the hind border, the opaque lack very narrow between the tips of the side spots, broader in front, nd reaching across the segment in front of the narrow yellow hind border; third segment with a large spot in front on the sides, usually more eddish, and a narrow yellowish hind border; across the middle a shining ture band, leaving an opaque black spot in front and a similar colored scia behind; fourth segment with a shining cross-band in front, opaque hind, posterior border more broadly yellow; hypopygium shining black. n the female the yellow spots on the third segment are usually smaller r wanting. Pile on the opaque portions black, elsewhere yellowish. In ome specimens the abdomen is ferruginous on the shining parts, and the paque portions of a deeper color. Legs: anterior and middle pairs yelowish or reddish, the base of femora and tip of tibiæ brownish, hind femra considerably dilated, usually broadly blackish, sometimes deep red,

distal half of hind tibiæ blackish. Wings hyaline, basal portion a little yellowish.

Ten specimens, Florida (Professor Riley), Georgia, Cuba.

Eristalis albiceps.

Eristalis albiceps Macquart, Dipt. Exot., ii, 2, 56, 41; Osten Sacken, Cat. Dipt. 131, note 221.

Eristalis seniculus Loew, Centur., vi, 63.

Habitat.—Carolina (Macq.), Cuba (Loew), Florida, San Domingo!

♂. Length, 8 to 9^{mm}. Black, opaque. Eyes pilose, contiguous in male. Face concealed beneath white pollen and thick pure white pile, most abundant and conspicuous on the frontal triangle. Facial stripe and cheeks shining black. Antennæ obscurely reddish or ferruginous; arista bare. Dorsum of thorax clothed with yellowish-white pile in front, intermixed with blackish behind; in front of the suture with a conspicuous grayish pollinose fascia, and on each side with an oblique spot reaching from the root of the wing backward toward the scutellum. Scutellum yellow, base narrowly black, pile black. First segment of abdomen black, outer angles yellow; second segment light yellow, with a narrow median opaque black stripe not quite reaching the hind margin, a little broader in front, where it connects with the semicircular black below the scutellum; third segment with an oval reddish yellow spot on each side confluent with the yellow of the preceding segment, the hind border yellow, the black deep opaque without any shining spot or fascia; fourth segment with a yellow hind border, and a narrow interrupted shining fascia dilated on the sides; hypopygium shining black with light pile, pile on the opaque portions black, on the yellow spots yellow. Legs black; hind femora dilated; knees, basal third of front and hind tibiæ, basal half of the intermediate tibiæ, and the middle metatarsi, light yellow; the extreme base of the anterior metatarsi luteous. Wings hyaline, sometimes faintly clouded in the middle and outer parts; near the end of the marginal cell there is a distinct curvature of the second vein into the submarginal cell.

♀. Differs in the presence of a complete grayish band on the dorsum of the thorax in front of the scutellum, in the second segment of the abdomen being broadly opaque black in the middle, narrower in front and extending as a fascia to the lateral margin of the abdomen behind; the third and fourth segments have each, also, a narrow, interrupted shining fascia, and the lower part of the front is not wholly white pilose.

Baron Osten Sacken, after an examination of the type of *albiceps*, states that it looked like *seniculus* of Loew. Macquart's description applies sufficiently closely, except the "yeux nus," which is probably an error, such as he has also made in regard to other North American species of this genus. The description of *seniculus* applies fully to the specimens which I have from Florida (two, Dr. Whitfield), Georgia (two, Professor Riley) and San Domingo (three, Mr. G. F. Frazar).

Eristalis hortorum. (Plate VII, fig. 10.)

Musca surinamensis Degeer, vi, 145; tab. xxix, fig. 1.
Syrphus hortorum Fabricius, Syst. Ent., 764, 11; Ent. Syst., iv, 286, 29.
Eristalis hortorum Fabricius, Syst. Antl., 236, 16; Wiedemann, Auss. Zw. Ins., ii, 169.

Habitat.—West Indies!

♂. Length, 12mm. Antennæ orange-yellow, arista bare. Face and front orange-yellow, thickly covered with yellow pollen and pile; face with a shining yellowish red stripe, not very broad; cheeks with a shining black stripe. Eyes pilose, contiguous. Thoracic dorsum black, shining behind; front margin grayish pollinose, separated by a black band from the rather slender yellowish-grayish band on the suture; in front of the scutellum rather broadly yellowish-grayish pollinose, separated, or nearly so, from a similarly colored spot along the post-alar callus. Pleuræ thickly white pollinose below, above with golden yellow pile. Scutellum wholly yellowish-red. Second segment of abdomen on each side with a large yellowish-red triangle, broadly separated by opaque black, which extends out narrowly nearly to the lateral margin behind; posterior margin yellow; pile behind black, elsewhere yellow. Third segment wholly shining, with black pile, except on the lateral margins; fifth segment shining metallic, with golden-yellow pile, posterior margin yellow, and just before it a narrow transverse opaque black fascia. Hypopygium wholly shining black, with golden-yellow pile. Legs yellowish-red, base of four front tibiæ light yellow; hind femora considerably thickened, hind tibiæ compressed, in front and behind with a fringe of black pile. Wings on the posterior portion hyaline, in front on the basal portion yellow, from before the cross-veins to near the tip and beyond the middle dark brown.

Four specimens, San Domingo (G. F. Frazar).

Eristalis atrimanus.

Eristalis atrimanus Loew, Centur., vi, 62.

Habitat.—Cuba (Lw.), San Domingo!

♀. Length, 12mm. Black, opaque. Eyes pilose, broadly contiguous. Face thickly clothed with yellowish-white pollen and pile, median stripe and the cheeks bare, black and shining. Antennæ blackish, arista bare. Frontal triangle black, shining in the middle and clothed with black pile, along the edge narrowly white pollinose. Dorsum of thorax on the anterior margin cinerescent, across the suture with a transverse, yellowish-white pollinose band; anterior part of the dorsum with yellow pile, posterior part with black pile. Scutellum ochraceous yellow; pile chiefly yellow, the remainder black. First abdominal segment black, the lateral angles yellow; second, with two large yellow spots touching the front margin in their whole length, rather narrowly separated in the middle and extending on the sides nearly to the hind margin, their inner ends convex from the front border of the segment; the black is

wholly opaque, extending narrowly to the lateral margins; third segment with two large yellow spots, leaving the black similar to that of the preceding segment, but extending a little more broadly to the lateral margins, and more rounded in front; fourth segment opaque black, with a slender, narrowly interrupted, metallic cross-band; hind margins of the second, third, and fourth segments yellow; hypopygium shining black, with yellow pile; elsewhere the pile on the black portions is black, on the yellow parts yellow. Legs black; tip of four front femora, basal third of four front tibiæ, and narrow base of hind tibiæ, yellow; hind femora but slightly thickened. Wings hyaline.

♀. Front with a broad median black stripe, entire, black pilose, on the sides concealed beneath yellowish pollen and whitish pile. Second segment of the abdomen with the yellow not extending so far backward and more narrowly separated; third segment wholly without yellow, on each side with a shining spot.

Three males and one female, San Domingo (G. F. Frazar). I believe my identification of this species is correct, but I do not observe any pollinose spot near the post-alar callus as Loew describes.

Eristalis pilosus.

Eristalis pilosus Loew, Centur., vi, 70.

Habitat.—Greenland (Lw.)!

♂, ♀. Length, 11 to 13^{mm}. Black, thickly clothed with long yellow pile; eyes black pilose; antennæ black, arista bare; face black; thorax unicolorous, opaque; scutellum luteous; first two abdominal segments opaque; the second on each side with a dilutely lutescent spot; third black, with two opaque spots, confluent in an abbreviated fascia; two ultimate segments bronze-black, shining, with a minute triangular spot opaque; pile of the dorsum reddish, on the sides of the middle black, remainder yellow; wings pure hyaline, veins fuscous black, in the female with a blackish spot.

Black, clothed with long yellow pile, sometimes lighter. Head black, yellow pilose; face of the same color, and, except the very broad median stripe, is thinly covered with yellowish pollen; eyes in both sexes black pilose, in the male contiguous, in the female broadly separated. Antennæ black, arista bare. Thorax unicolorous, opaque; pile wholly yellow. Scutellum dilutely lutescent, very thickly yellow pilose. First two segments of the abdomen opaque; second on each side with a subrotund spot, very dilutely lutescent, on the posterior margin smooth. Third segment shining, with two opaque spots, forming an abbreviated fascia. The remaining segments are bronze-black, shining, except a minute triangular spot, situated near the margin of the fourth segment. Pile of the abdomen yellow, in the middle of the abdomen reddish, near the tip sometimes pallid, on the posterior angles of the second segment, and the lateral margins of the third segment, except the angles, black. Legs black, black pilose; hind femora slender, narrow

base of the tibiæ fuscous. Wings pure hyaline, veins fuscous-black, veins of the disk in the female clouded with blackish.

Translation from original, compared with the types.

Eristalis obscurus.

Eristalis obscurus Loew, Centur., vi, 67.

Habitat.—Red River of the North (Loew)!

♂. Length 10 to 11^{mm}. Bronze-black, shining, clothed with rather long, dilutely lutescent-cinereous pile; front broad, above black pilose; eyes pilose. Antennæ reddish-ferruginous, first two joints black; arista pilose; face, except the usual stripes, yellowish-red, white pollinose and white pilose. Scutellum brown, black near the base. Each abdominal segment, except the first, with a posterior black fascia, not emarginate, and with a very slender posterior yellow margin. Legs black; tip of all, and base of hind, femora, the basal third of front and hind tibiæ, middle tibiæ, except the tip, and the first two joints of all the tarsi, light yellowish. Wings pure hyaline, veins of the disk clouded with fuscous.

Similar to *E. dimidiatus*. Bronze-black, shining, clothed with rather dilutely lutescent-cinereous pile. Front broad, concolorous, above black pilose, a median spot on the front margin reddish, the lateral margins in front white pollinose. Face yellowish-red or red, white pollinose and white pilose, median stripe black, rarely pitchy, oral margin and the cheeks always black. First two joints of the antennæ black, third red or ferruginous-red, rarely obscurely fuscous; arista pilose. Thoracic dorsum neither striped nor fasciate. Scutellum pitchy or brown, near the base always metallic black. First segment of the abdomen glaucous, white pilose; second segment with two velvety fasciæ, separated by a shining fascia which is much dilated on the sides; the posterior margin yellow. In the following segments, besides the very slender yellow hind margin, with a posterior opaque black fascia, that on the third segment velvety, on the remaining segments moderately shining. Pile on the posterior part of each segment black, on the front portions in great part cinerescent. Legs black, pallidly pilose; hind femora slender, near the base yellow; tip of all the femora, basal third of front and hind, and the middle tibiæ except the tip, and the first two joints of all the tarsi, light yellow, the second joint near its tip blackish. Wings pure hyaline, the disk clouded with fuscous, stigma and immediate base fuscous.

Translation from the original, compared with the type at Cambridge.

Eristalis inornatus.

Eristalis inornatus Loew, Centur., vi, 68.

Habitat.—Red River of the North (Lw.)!

♀. Length 13^{mm}. Submetallic black, shining, clothed with rather long lutescent pile; front broad, near the ocelli black pilose, but the vertex itself with luteous pile. Eyes pilose. Antennæ reddish-ferruginous, the first two joints black; arista pilose. Face, except the usual

stripe, yellow, with dilutely lutescent pile and pollen. Scutellum wholly reddish. Each segment of the abdomen, except the first, with a black posterior fascia, on the second and third emarginate and velvety opaque, on the following sub-shining; posterior margins of the segments very narrowly yellow. Legs black; extreme tip of the femora, the basal half of front and hind tibiæ, the middle tibiæ except the distal third and the first joint of the middle tarsi, light yellowish. Wings hyaline, the veins of the disk broadly subfuscous clouded.

Somewhat bronze-black, shining, clothed with rather long lutescent pile. Front broad, concolorous, with thick luteous pile, near the ocelli black pilose, on the sides anteriorly luteous pollinose, the anterior margin above the antennæ reddish. Face longer than in *E. obscurus* and the tubercle smaller, concealed beneath dilutely lutescent pollen, and clothed with the same colored pile, a rather slender median stripe and the cheeks black. First two joints of antennæ black, third reddish-ferruginous; arista pilose. Thorax unicolorous, moderately shining, wholly luteous pilose, the pile of the pleuræ, however, lighter colored. Scutellum reddish, luteous pilose. First abdominal segment glaucous, remaining segments shining, posterior margins of the second, third, and fourth segments narrowly yellow. On the second segment there are two velvety-black fasciæ, one on the anterior margin and attenuated on the sides, the other touching the posterior margin and emarginate; third segment with similar fasciæ, but the anterior one is more slender. Last two segments wholly shining, near their posterior margins a deeper black. Pile of the abdomen chiefly black, on the first segment white, on the front half of the second segment and near the anterior angles of the intermediate segments pallid lutescent, on the ultimate segments pallid, intermixed with black. Legs black, light yellow pilose, hind femora slender; tip of the femora, front and hind tibiæ at their base, middle tibiæ, except the tip, and the first joint of the middle tarsi with the base of the second joint, light yellowish. Wings hyaline, veins black-fuscous, near the base of the wings reddish, a large, dilutely subfuscous spot on the disk, stigma minutely black-fuscous.

"The type specimen has the abdomen somewhat rubbed, so that it is difficult to judge correctly of the pile."—Loew.

Translation from the original. The single type specimen at Cambridge is in poor preservation. The species is allied to *dimidiatus*.

Eristalis oestriformis.

Syrphus oestriformis Walker, List, etc., iii, 573.
Eristalis oestriformis Osten Sacken, Cat. Dipt., 131, note 227, p. 249.

Habitat.—Hudson's Bay Territory (Walk.).

"Mas. Niger, thoracis pilis anticis nigris posticis fulvis, scutello fulvo, abdomine pilis albis nigris fulvisque fasciato, antennis piceis, pedibus nigris, alis limpidis fusco unimaculatis.

"Body black: head clothed with dull tawny hairs, shining and promi-

nent in front: mouth pitchy: feelers pitchy: bristle ferruginous, downy: eyes pitchy, each with a broad stripe of short black hairs: all the facets very small: chest clothed with short black hairs, and on the hinder part with pale tawny hairs; scutcheon tawny, very thickly clothed with pale tawny hairs: abdomen nearly oval, broader and a little longer than the chest, clothed with white hairs at the base, with black hairs in the middle, and with bright tawny hairs towards the tip: legs black, clothed with short black hair: knees pitchy: shanks and feet clothed beneath with tawny down: hind feet tawny: claws and foot cushions tawny: tips of claws black: wings colorless: large dark brown spot in the disk: wing ribs pitchy: veins black, ferruginous towards the base and along the free borders: poisers ferruginous. Length of the body 7 lines; of the wings [spread] 14 lines."—Walker.

"*Syrphus oestriformis* Walker is a rather peculiar Eristalis, represented by a single specimen in the British Museum."—Osten Sacken.

Eristalis parens.

Eristalis parens, Bigot, Ann. Soc. Ent. Fr., 1880, 216.

Habitat.—North America (Bigot).

♀. Long. 13^{mm}. Oculis hirtis, cheto basi breviter villoso (*E. arbustorum* simillimo). Antennis castaneis; facie nigra, utrinque cinereo obscuro villosa; thorace nigro, dense fulvo velutino; scutello fulvo; calyptris testaceis; abdomine, segmento secundo, utrinque, macula lata, trigona, fulva, tertio maculis simillimis, sed angustioribus, cunctis anguste fulvo marginatis; femoribus obscure castaneis, geniculis et tibiis pallide testaceis, apice late castaneis, tarsis obscure rufis, apice parum infuscatis; alis fere hyalinis, basi, et, extrinsecus, dilute et pallidissime infuscatis.

Resemble à l'arbustorum. Yeux velus, chète brièvement velu à sa base. Antennes brunâtres; face noire, couverte, de chaque côté, par un duvet grisâtre; thorax noirâtre, couvert d'un duvet roussâtre assez dense, flancs à poils roussâtres; écusson d'un testacé foncé; cuillerons testacés; abdomen d'un noir luisant, presque nu, tous les segments finement bordés de fauve, base du 1er à poils grisâtres, 2^{e} et 3^{e}, de chaque côté, avec une macule fauve, triangulaire, beaucoup plus étroite sur le 3^{e}, ventre d'un gris jaunâtre; pieds d'un brun rougeâtre avec un fin duvet gris, genoux et tibias, à la base, d'un testacé blanchâtre devenant plus foncé vers leurs extrémités; ailes presque hyalines, nervures, base, bord externe, d'un roussâtre très-clair.—Bigot.

ADDITIONAL NORTH AMERICAN SPECIES.

Eristalis agrorum Fabricius, Ent. Syst., iv, 285, 27 (*Syrphus*); Syst. antl., 235, 12; Wiedemann, Auss. Zw. Ins., ii, 172, 28.—Guadeloupe.

Eristalis albifrons Wiedemann, Auss. Zw. Ins., ii, 189; Röder, Stett. Ent. Zeit., 1885, 340.—Porto Rico.

Eristalis Bellardii, Jænnicke, Neue Exot. Dipt., 92.—Mexico.

Eristalis cubensis Macquart, Dipt. Exot., ii, 2, 42, 19.—Cuba.

Eristalis diminutus Walker, List, etc., iii, 622.—Mexico.
Eristalis explotus Walker, Trans. Ent. Soc. N. Ser., v, 291.—Mexico.
Eristalis familiaris Walker, Trans. Ent. Soc. N. Ser., v, 290.—Mexico.
Eristalis fulvipes Bigot, Ann. Soc. Ent. de Fr., 1880, 225.—Mexico.
Eristalis furcatus Wiedemann, Auss. Zw. Ins., ii, 176, 34.—Brazil, Columbia, Yucatan.
E. femoratus Macquart, Dipt. Exot., ii, 2, 40, 15; tab., ix, fig. 6.
Eristalis guadalupensis Macquart, Dipt. Exot., ii, 2.—Guadeloupe.
Eristalis Gundlachi Loew, Centur., vi, 61.—Cuba.
Eristalis impositus Walker, Trans. Ent. Soc. N. Ser., v, 289.—Hayti.
Eristalis lateralis Walker, Linn. Trans., xvii, 347, 42; List, etc., iii, 622.—Brazil, Chili, Guiana, Mexico, Jamaica.
Eristalis mexicanus Macquart, Dipt. Exot., 2e Suppl., 59, 54.—Mexico.
Eristalis pachypoda Bigot, Ann. Soc. Ent. de Fr., 1880, 224.—Mexico.
Eristalis pusio Wiedemann, Auss. Zw. Ins., ii, 192; Röder, Stett. Ent. Zeit., 1885, 341.—Porto Rico.
Eristalis Sackenis Bigot, Ann. Soc. Ent. de Fr., 1880, 224.—Mexico.
Eristalis semicirculus Walker, Dipt. Saund., 249.—Honduras.
Eristalis Soulouquensis Bigot, Ann. Soc. Ent. de Fr., 1880, 228.—Hayti.
Eristalis testaceicornis Macquart, Dipt. Exot., 4e Suppl., 138, 62.—Mexico.
Eristalis tricolor Jænnicke, Neue Exot. Dipt., 92.—Mexico.
Eristalis unicolor v. d. Wulp, Tijdschr. v. Entom., xxv, 131.—Guadeloupe.
Eristalis basilaris Macquart, Hist. Nat. Dipt., i, 502, 4.—North America.
Eristalis inflatus Macquart, l. c., 507, 18.—North America.

"I did not find the types of these species either in Lille or in Paris, and the descriptions do not apply to any of the known species." (O. Sacken, Cat. Dipt., 133.)

Eristalis ovens Walker, Dipt., Saunders., 246.—North America.

Osten Sacken could not find the type of this species in the British Museum; the description will not permit identification.

DOLIOSYRPHUS.*

Doliosyrphus Bigot, Bullet. Soc. Ent. de France, No. 13, 1882.
? Priomerus Macquart, Hist. Nat. Dipt., i, 511, 1834.

Allied to *Eristalis*, but differs chiefly in the structure of the head and abdomen. Large, black and yellow, thinly pilose species. Head large, globose. Eyes pilose. Frontal triangle of the male large, projecting, in profile forming an obtuse angle near the middle. Antennæ small, arista bare. Abdomen broadest at base of second segment; narrowed to the tip of the fourth segment, concave on the sides, the tip of fourth segment less than a half of the width of the second segment. Hind femora much swollen and elongate, hind tibiæ compressed and arcuate. Otherwise as in *Eristalis*. Type of genus *D. scutellatus* Bigot.

This description is drawn from males of *D. Rileyi*. I have seen three other species from Mexico, all agreeing essentially in these characters, and I believe the genus is a well-founded one.

Doliosyrphus Rileyi, n. sp. (Plate VIII, fig. 8.)

Habitat.—New Mexico!

♂. Length, 14 to 15mm. Eyes pilose. Antennæ blackish brown; arista thin, bare. Face concealed beneath dense gray pollen, on the sides

* Δόλιος, deceitful; σίρφος, a small winged insect.

more ochraceous, an elongate median spot, and the cheeks in front, shining black; in profile gently concave below the antennæ, the tubercle nose-like. Frontal triangle very projecting in profile, obtusely angulated in the middle; shining black, with black pile; the white dust of the face extends up narrowly along the eyes. Dorsum of thorax opaque black, the anterior border and a narrow transverse band on the suture grayish-yellowish pollinose, in front of the scutellum a broad subquadrate area shining, deep metallic blue. Pleuræ thickly grayish pollinose below; on the mesopleuræ with yellow pile, which extends up to the end of the transverse band. Scutellum light opaque yellow with short sparse black pile; at the base rather narrowly opaque black. Abdomen brownish black, opaque, with two pairs of large quadrilateral yellow spots; the black of the second segment is a little broader in front, and extends outward behind rather narrowly and acutely to the lateral margin; spots on the third segment subquadrate, touching the anterior margin, and separated by about their own width; fourth segment with abluish, metallic, subinterrupted, shining cross-band; second, third, and fourth segments with a narrow yellow hind margin. Hypopygium wholly shining black. Legs black, tibiæ and tarsi reddish brown. Wings lightly infuscate on distal half, and with an obscure brownish spot.

Four specimens, New Mexico (Mr. G. F. Gaumer). I take pleasure in dedicating this beautiful species to Prof. C. V. Riley.

ADDITIONAL NORTH AMERICAN SPECIES.

Dolichsyrphus hirtipes Bigot, Bull. Soc. Ent. de Fr., 1882; Ann. Soc. Ent. de Fr., 1883, 343. Panama.

Dolichsyrphus scutellatus Bigot, Bulletin Soc. Ent. de Fr., 1882; Ann. Soc. Ent. de Fr., 1883, 342. Panama.

PTEROPTILA.*

Plagiocera Macquart (non Klug), Dipt. Exot., ii, 2, 59, 1842.
Pteroptila Loew, Centur., vi, 59, 1865.

Large, robust, nearly bare species, with bright yellow markings of very short pile on thorax and abdomen. Head hemispherical, a little broader than the thorax. Eyes in male contiguous, bare; antennæ small, third joint oval, first two joints short. Face nearly perpendicular, below the antennæ a little receding, not much produced below the eyes, very slightly tuberculate. Thorax somewhat narrowed in front; scutellum broad. Abdomen moderately longer than the thorax, the hypopygium large, unsymmetrical. Legs moderately stout, the hind femora considerably thickened, without spines or protuberances below. Wings dark colored in front, clothed with microscopic pile; the third vein bent deeply into the first posterior cell; marginal cell closed and petiolate; anterior cross-vein beyond the middle of discal cell.

* Πτερόν, wing, and πτιλόν, plumage.

TABLE OF SPECIES.

1.—Legs black; third abdominal segment with an entire yellow cross-band, the first segment without yellow spots . . . . . **cincta**

The four front legs, at least, not black; third segment with a pair of spots, first segment also with yellow 2

2.—Terminal joints of the tarsi black; the dorsal suture with four distinct spots. **decora**

Tarsi wholly light colored; spots on suture coalescent into an interrupted band 3

3.—Black species; hind femora in part black; abdomen considerably narrowed posteriorly . . . . . **crucigera**

Abdomen and head yellowish reddish; legs without black; abdomen moderately narrowed posteriorly . . . . . **ruficrus**

Pteroptila crucigera. (Plate VIII, figs. 1, 1*a*, 1*b*, 1*c*.)

? *Milesia acuta* Fabricius, Syst. Antl., 189, 7; Wiedemann, Auss. Zw. Ins., ii, 110, 8 (translation from Fabricius).

Milesia crucigera Wiedemann, Auss. Zw. Ins., ii, 105, 2.

Mallota milesiformis Macquart, Hist. Nat. Dipt., i, 500.

Plagiocera crucigera Macquart, Dipt. Exot., ii, 2, 60, 1; pl. x, fig. 7.

Habitat.—Georgia, Florida, Texas! Yucatan (Macq.).

♂, ♀. Length, 14 to 15mm. Antennæ reddish brown. Face yellowish red, thickly clothed on the sides with whitish pollen and bright yellow pile; a broad median stripe and the cheeks shining black, sometimes reddish. Front in female narrow above, with a broad black stripe, yellow pilose on the sides below the ocelli; frontal triangle with a slender triangular black spot; posterior orbits with abundant short yellow pile. Thorax black, but little shining, in front with two opaque black stripes, not reaching the suture; clothed with very short black pile and with markings of short, thick, bright-yellow pile as follows: an oval spot on each side of the middle in front; a fascia extending along the suture, broadly interrupted in the middle and continued outwardly to a spot on the sternopleuræ; another transverse fascia extends across in front of the scutellum, narrowed on the sides before reaching the spots on the post-alar callosities; the anterior spiracles just below the humeri are light yellow, and the posterior pair on the sides of the mentanotum white. Scutellum yellowish on its border. Abdomen black, somewhat shining; the first segment and anterior part of second opaque; first segment with a pair of oval spots of yellow pile on the hind part; second segment with narrow posterior yellow margin; third segment with a yellow pilose spot on each side in front, and a quite narrow yellow hind margin; fourth segment similar, but the spots smaller, and the hind margin very narrow or obsolete. Hypopygium shining reddish brown, slightly yellowish pollinose. Legs light reddish yellow, the hind femora in large part blackish. Wings on the basal portion in front as far as the cross-veins yellowish; beyond dark brown, filling out the sub-costal, the marginal, submarginal, outer part of first basal, and the anterior part of first posterior cells.

Five specimens.

In specimens illy preserved the yellow pile markings of the abdomen or thorax may be wholly rubbed off, leaving only indistinct whitish spots in their place. The second segment may also show an elongate reddish spot on each side near the middle.

Pteroptila decora.

Pteroptila decora Loew, Centur., vi, 59.

Habitat.—Cuba!

♂, ♀. Length, 9 to 12mm. Black. Head of the same color, posterior orbits thickly fringed with yellow pile, or tomentum. Front yellow pilose; vertex, and median stripe black. Antennæ ferruginous; third joint short ovate, above blackish. Face thickly clothed with white pollen and yellow pile, leaving a median shining black stripe; cheeks broadly shining black, except the posterior part. Dorsum of thorax with nine yellow spots as follows: Two on the front margin, four on the transverse suture, and three sub-coalescent ones on the posterior margin. Scutellum reddish or reddish-black, black at the base. Abdomen with six yellow spots, namely, two subarcuate ones on the first segment, and two larger ones on the anterior angles of the third and fourth segments. Hypopygium brown. Legs luteous, or brownish-luteous; outer part of the hind femora subfuscous or fuscous, the extreme tip, however, always lighter colored; last three or four joints of all the tarsi black. Wings hyaline, brown on the front part; as far as the tip of the auxiliary vein the color is more yellowish, the costal cell especially so.

Two specimens.

Pteroptila ruficrus.

Milesia ruficrus Wiedemann, Auss. Zw. Ins., ii, 105, 3.

Habitat.—Cuba!

♂, ♀. Length, 12 to 13mm. Brownish-yellowish, the dorsum of thorax blackish brown. Vertical triangle of male elongate. Stripe of front and face shining brownish-yellow, the pile on the sides and posterior orbits light yellow; cheeks like the facial stripe. Antennæ yellow, the third joint somewhat brownish. Yellow pilose markings of the thorax as in *P. crucigera*; that is, with two anterior spots, an interrupted sutural cross-band, and three sub-coalescent spots on the hind border. Scutellum yellowish-brown. Abdomen with a pair of coalescent, arcuate, yellow pilose spots on the first segment, a slender, nearly contiguous, pair on the anterior border of the third segment, and a smaller pair on the sides of the fourth; second, third, and fourth segments each with a slender yellow hind margin; in color the abdomen is dark ferruginous or yellowish-red. Legs yellow, or somewhat reddish-yellow, the hind femora, except the basal portion and tip, reddish or brownish-red. Wings light-brown on the anterior part, hyaline behind; on the basal portion the brown is much more dilute or yellowish, the costal cell light yellow.

Two specimens (G. F. Gaumer).

This species chiefly differs from *P. crucigera* in its more yellowish-reddish color throughout (most noticeable in the abdomen, facial stripe, hind femora, etc.), in the yellow pollinose spots of the first abdominal segment being united, and in the female abdomen being less narrowed behind.

Pteroptila cincta.

Musca cincta Drury, Ins., i, 109; pl., xlv, fig. 6.
Syrphus pinguis Fabricius, Syst. Ent., 763, 6; Ent. Syst., iv, 282, 16.
Eristalis pinguis Fabricius, Syst. Antl., 233, 6; Wiedemann, Auss. Zw. Ins., ii, 193, 61.
Milesia Ania Walker, List, etc., iii, 564; Macquart, Dipt. Exot., 5er Suppl., 94, 2.

Habitat.—San Domingo!

♀, ♂. Length, 17 to 19mm. Black. Eyes of male broadly contiguous. Front of female black, shining, narrowly white pollinose on the sides below. Cheeks and a broad facial stripe shining black; the sides of the face densely white pollinose and thinly white pilose. Antennæ black. Posterior orbits white pollinose and pilose. Thorax opaque black, with bright yellow markings of short dense pile, as follows: Two rounded spots on the front margin, one on each side at the outer ends of the transverse suture, coalescing with larger one on the mesopleuræ, one of longer pile on each post-alar callus, connected by a transverse one in front of the scutellum. Tegulæ light yellow, fringed with yellow pile. Scutellum deep brownish-red, black at the base. Abdomen opaque black, sometimes tinged with red; second segment with a pair of large, deeply opaque, red triangles; third segment in front with an entire cross-band of bright yellow pile, very slightly emarginate in the middle behind; fourth segment with a small spot on each side of the same colored pile; in the female a small triangle on the third segment behind, two-thirds of the fourth segment, and the fifth segment wholly, deep shining bluish-green; in the male the larger part of the fourth segment and the very large hypopygium are shining brownish-red. Legs deep black, the pulvilli light yellow; in the male on the posterior sides of the front and middle femora with thick black pile. Wings hyaline, rather narrowly brownish along the front border.

Five specimens (Frazar.)

Pteroptila zonata.

Pteroptila zonata Loew, Centur., vi, 60.

Habitat.—Mexico (Lw.)!

♂. Length, 13.5mm. Black, opaque, sides of the face white pollinose; two spots on the anterior margin of the thorax, the transverse suture, the posterior margin of the thorax, and a basal abdominal fascia, white tomentose; fascia of the second abdominal segment livid; on each of the following segments a basal, yellow tomentose fascia; hypopygium yellow pollinose; wings hyaline, stigma and the marginal and submarginal cells blackish.

Black, opaque. Head of the same color, the lateral margins of the front, and the face, except the median stripe, white pollinose. Antennæ black, third joint ovate. Scutellum livid, near the base black. First segment of the abdomen, except the base, white pollinose; second segment with a livid fascia, narrowly interrupted, toward the sides strongly dilated, but abruptly cut off before reaching the margin, hind margin yellow; the two following segments, each with a narrow basal fascia yellow tomentose, and the posterior margin vitelline yellow. Hypopygium thickly clothed with vitelline pollen. Legs vitelline yellow; front femora wholly, the base of the middle femora, and the hind femora, except the distal third, black; the hind femora black setulose below, elsewhere the legs wholly clothed with light pile. Wings pure hyaline, all the veins fuscous-black, stigmatic cell, the marginal and submarginal cells blackish.—Translation.

ADDITIONAL NORTH AMERICAN SPECIES.

Pteroptila pratorum.

Syrphus pratorum Fabricius, Syst. Ent., 765, 13; Ent. Syst., iv, 286, 31. West Indies.

Eristalis pratorum Fabricius, Syst. Ant., 236, 18; Wiedemann, A. Z., ii, 166.

Pteroptila opulentus Bigot, Ann. Soc. Ent. de Fr., 336 (*Eristalis*). Cuba.

HELOPHILUS.*

Elophilus Meigen in Illigers Magazine, ii, 274, 1803.
Asemosyrphus Bigot, Bull. Soc. Ent. de Fr., No. 13, 1882.
Eurhimyia Bigot, Bull. Soc. Ent. de Fr., No. 2, 1883.

Mostly large, nearly bare species, black or blackish brown, with yellow spots or bands, usually readily distinguished by the presence of light pollinose stripes on the dorsum of the thorax; head hemispherical, not flattened. Antennæ short, the third joint oval; arista basal, bare. Face below the antennæ in profile gently or considerably excavated, the lower part sometimes strongly produced, usually with a tubercle; eyes bare, rarely pilose, separated by a rather broad interval in the male. Scutellum usually more or less translucent. Abdomen sometimes rather broadly oval, often more or less narrowed, sometimes cylindrical. Legs rather stout; the hind femora more or less thickened, and the hind tibiæ arcuate; hind coxæ in the male rarely with a spinous tubercle below. Marginal cell of the wings open; the third longitudinal vein deeply bent into the first posterior cell; small cross-vein oblique, beyond the middle of the discal cell.

See Appendix.

*"Ηλιος, the sun, and φιλος, a lover.

Helophilus glacialis.

Helophilus glacialis Loew, Stett. Ent. Zeit., 1843, 120.

Habitat.—Labrador (Lw.)!

♀. Length, 12.5 to 13mm. Face deeply concave below the antennæ, below strongly produced, tubercle large, in profile much receding; the lower border forms with the posterior border of the head an obtuse angle; in the middle a broad shining black stripe, gray dusted above, but reaching to the base of the antennæ; elsewhere as on the greater part of the front covered with whitish-yellow, sometimes more grayish-yellow, pollen; cheeks shining black. Antennæ black; immediately above their base a shining black spot; vertex blackish, the middle line of the front sometimes dark; pile of the front black, on the vertex in moderate extent yellowish. Thorax opaque black, the usual light stripes grayish-white, the front half of the lateral ones and the posterior part of the middle ones indistinct; pile of the dorsum wholly yellow. Scutellum yellowish-brownish, shining; wholly yellowish pilose. Abdomen black, wholly shining on the dorsum; on the second segment on each side there is a large yellow—usually three-cornered—spot, of which the point that is directed inward is usually somewhat whitish colored, and is narrowly separated from the opposite one; on the third segment on each side a narrow whitish arcuate band, which starts from a small yellow spot on the anterior angle of the segment; on the fourth segment the same whitish semi-fascia, but no indication of the yellow spot; on the last segment the bands also present, but somewhat shorter and less distinct; the pile on each segment in front is whitish, behind the bands, blackish; on the lateral margins of each segment the whitish-yellow pile reaches farther back, so that on the posterior angles only a trace of the blackish pile remains. Venter shining black, beset with sparse, obscure whitish pile. Femora black, the hind pair of moderate breadth, the tip of all yellow; tibiæ black, basal third of the hind pair, and rather more than a third of the front and middle pairs yellow, the hind pair moderately bent, and not thickened at the end, the tarsi throughout black. Wings hyaline, somewhat grayish-brownish; stigma light brown, scarcely darker at the base; the longitudinal vein behind the anal cell is somewhat strongly arcuate near its end, the last section of the same vein strongly bent.

Is intermediate in position between *H. groenlandicus* and *H. borealis*. From the former is distinguished (1) by the much more retreating face, (2) by the lack of black pile on the posterior end of the black thoracic stripes and the fore part of the scutellum, (3) by the indistinctness of the light-colored thoracic stripes, and the somewhat more distant position of the two middle ones, (4) by the shining color of the abdomen, which in *groenlandicus* is confined to the posterior part of the segments, (5) by the greater slenderness of the abdominal bands, (6) by the somewhat less width of the hind femora, and the yellow tips.—Loew, l. c.

Helophilus groenlandicus.

Tabanus groenlandicus O. Fabricius, Fauna Groenland., 208, 170.
Helophilus arcticus Zetterstedt, Ins. Lapp., 595, 2; Dipt. Scand, 678, 2; Staeger, Kroyer's Tidsskrif. N. R., i, 359, 24; Loew, Stett. Ent. Zeit., vi, 119, 1843.

Habitat.—Greenland, Lapland (Lw.)!

♂, ♀. Length, 11 to 12mm. Face below the antennæ lightly excavated, below only a little produced, the tubercle slight, in profile nearly perpendicular; the lower line of the head forms with the occiput but little more than a right angle; in the middle of the face with a shining black stripe, which in well-preserved examples does not reach quite to the antennæ; elsewhere on the face, as also on the greater portion of the front, covered with whitish-yellow, sometimes somewhat darker, pollen; cheeks shining black. Antennæ black, immediately above their base with a shining black spot; a median stripe of the front and the region of the vertex dark, nearly blackish; pile of the front black, at the vertex yellowish. Thorax opaque black, the usual light-colored stripes nearly whitish, the lateral ones only distinct at the humeri, behind indistinct; the median ones very narrow, linear, very distinct, in all the specimens broken off before reaching the scutellum; the pile of the thorax is yellow, blackish only on the posterior part of the dark stripes. Scutellum brownish, shining, in front with black, behind with yellow, pile. Abdomen black, opaque, only a little shining on the hind margins of the segments, successively a little broader towards the hind part; on the second segment with a large, yellow, nearly a three-cornered spot on each side, the inner angles of which are usually whitish and approach each other moderately near; on the third segment there is on each side a narrow, yellowish-whitish curved semi-fascia which terminates in a small yellow spot in the anterior angle of the segment, which often in the male has a greater extent; on the fourth segment are seen the same yellowish-whitish semi-fasciæ but no trace of the yellow spots; on the last segments the spots are smaller and less fasciate. The pile in front of the hind margin of the fasciæ is yellowish, from thence to the hind margin of each segment blackish; on the lateral margins the yellow pile extends somewhat farther back, the hind angles, however, always more or less black pilose. Femora black, hind pair moderately dilated; front pair at the extreme tip brownish-yellow, on the hind pair there is a trace of the same color on the under side of the tip; tibiæ black, with the base brownish-yellow; hind pair moderately bent and not thickened at the extremity; tarsi black throughout. Wings hyaline with a grayish-brownish tinge; stigma light brown, darker at its beginning; distal portion of sixth vein moderately strongly arcuate, its terminal portion strongly bent.

Helophilus borealis.

Helophilus borealis Stæger, Kroyer's, Tidskrift, N. R., i, 359, 25. Loew, Stett. Ent. Zeit., vi, 1843, p. 123.

Habitat.—Greenland (Lw.)!

♀. Length, 12 to 13mm. Face strongly excavated in profile below the

antennæ, below strongly produced forwards, the tubercle very larg the middle with a broad, shining black stripe, reaching to the base c antennæ and on the lower half only slightly grayish dusted; elsew as on the greater part of the front, clothed with whitish-yellow (cheeks shining black; the lower border of the cheeks forms witl plane of the occiput an obtuse angle. Antennæ black; immedi above their base a shining black spot; the vicinity of the ocelli bl the middle line of the front also somewhat darker; pile of the black; at the vertex in moderate extent yellowish. Thorax op black, the usual stripes grayish, very narrow and indistinct, in the dle interrupted, the median ones obsolete behind. The pile of thorax is yellowish throughout, without any intermixture of b Scutellum brownish, shining, on the middle with blackish, on the der with yellow pile. Abdomen black, opaque, the hind margins c segments, successively wider posteriorly, moderately shining; se segment on each side with a large, yellow, three-cornered spot inner angles of which show only a trace of whitish color, and d approach each other very closely; third segment on each side w curved, narrow, semi-fascia, not quite reaching the lateral marg which there is no trace of a yellow spot; fourth segment with si whitish semi-fasciæ, which attain the lateral margins; on the last ment they are shorter and less distinct. The pile of the abdon thick, erect, noticeably longer than in the related species, of a y color, on the hind margin of the second segment somewhat dark the hind borders of the following segments in moderate extent blac on the lateral margins of the abdomen the pile is throughout yello only on the posterior angle of the posterior segments is there any t ish pile. Femora black, the hind pair of moderate width; in all th is brownish-yellow, in the hind pair, however, only at the extrem tibiæ black, base brownish-yellow, the hind pair but little arcua their end slightly yet distinctly thickened; tarsi black throug Wings hyaline, somewhat grayish-brownish tinged; stigma dark br sharply bordered at each end.

H. borealis is distinguished from *H. grœnlandicus* by the more ob profile of the face, by the greater length of the pile on the thorax tellum and abdomen, by the absence of black pile on the hind pa the black dorsal stripes, by the greater indistinctness and more re position of the median light-colored stripes, by the less dilatation c hind femora, which in the females on the distal half on the outer has a distinct longitudinal groove, while in *H. grœnlandicus* there is a large flat impression.—Loew, l. c., translation.

Helophilus mexicanus. (Plate VIII, fig. 7.)

Helophilus mexicanus Macquart, Dipt. Exot., ii, 2, 64, 6; tab. ii, fig 2; Sacken, Cat. Dipt., p. 257.

Helophilus polygrammus Loew, Centur., x, 55; Osten Sacken, West. Dipt

Asemosyrphus oculiferus Bigot, Annales Soc. Ent. Fr., 1883, p. 350. (Mal

? *Asemosyrphus nigroscutatus* Bigot, ibid., p. 351.

Habitat.—Washington Territory, California!, Mexico (Macq., O.

♂, ♀. Length, 11 to 12mm. Face with a short deep convexity below the antennæ to tip of tubercle, thence receding in a nearly straight line to the oral margin; median stripe and cheeks bare, black and shining; the sides of the face concealed beneath dense whitish-yellowish pollen and pile. Antennæ black, the arista reddish-yellow. Front in both sexes very broad, in the male narrowed a little before the ocelli, in the female broader, only a little narrowed toward the vertex; the ocelli in both sexes are remote from each other; the color is shining black above and in the middle below near the antennæ, yellowish pollinose on the sides and across broadly below the ocelli; the pile is yellowish, except across below the ocelli, and at the vertex, where it is black. Dorsum of thorax grayish-olivaceous-black, but little shining, leaving in the middle part six slender opaque black lines, that inclose three slender whitish, stripes, all of which are obsolete before the scutellum; the outer black lines are a little dilated before, and interrupted at the suture; in addition, on each side behind there is a slender opaque black stripe, which runs from the scutellum towards the outer end of the suture. Pile of thorax yellowish, rather abundant; more whitish on the pleuræ. Scutellum obscurely reddish on the outer part. Abdomen broad, not extending beyond the wings; in the female black, the first segment shining, with an opaque spot on each side; second segment on each side with a broad, nearly opaque spot, extending across the front margin, bordered behind on the sides by a light reddish-yellow spot that reaches from the anterior angle to the middle of the segment, extending as a narrow whitish pollinose cross-band inwards and separated from that of the other side by a not very broad opaque black interval; posterior part of the second segment shining, the narrow hind margin gray, as on the following segments; third segment with two slender, gray pollinose spots, beginning at the front angles and curving backwards, inwards, and then a little forwards, broader at the inner ends, and separated from each other by a narrow, partially opaque, interval; in front of these spots the black is sub-opaque, elsewhere shining; fourth segment similar, but the spots more slender and nearly touching the front margin on their inner ends, thus leaving on each side in front a small, opaque, semi-lunar spot. In the male the abdomen is in large part dark-reddish; on the third segment the color is almost wholly red, brownish behind, the gray spots nearly obsolete, leaving only the beginnings and tips; the fourth segment like that in the female, but the opaque parts are more brown, and the shining part red. Hypopygium wholly reddish. Legs black; the base and tip of four front tibiæ narrowly red, the hind tibiæ variegated black and red; all the tarsi more brown; metatarsi of the hind feet distinctly swollen. Wings nearly hyaline.

Six male and seven female specimens, California (O. T. Baron), Washington Territory (H. K. Morrison).

Helophilus latifrons.

Helophilus latifrons Loew, Centur., iv, 73; Osten Sacken, West. Dipt., 337.

Habitat.—Massachusetts, Connecticut, Western Kansas, Wyoming, Washington Territory, Montana, Oregon, California!, Red River of the North (O. S.)

♂, ♀. Length, 13 to 15mm. Face yellow, thickly covered with light yellow pollen and pile, leaving in the middle a moderately broad, shining, reddish-yellow stripe, which ends acutely a little below the antennæ; the lower end at the oral margin black. Cheek black, shining, pollinose behind. In profile the face is moderately concave above, from the tubercle to the oral margin nearly perpendicular and straight; the lower border of the cheeks forms with the plane of the occiput but little more than a right angle. The front in the male is broad above, in width fully equal to half the distance between the foremost ocellus and the base of the antennæ; across the ocelli black, a little shining, with black pile; below the front ocellus the black color is concealed beneath dense yellow pollen, and wholly yellow pile, a small triangle above the base of the antennæ shining, reddish or brownish yellow. Scutellum wholly translucent yellow, on the outer part sparsely and shortly black pilose, but chiefly yellow pilose. First abdominal segment grayish pollinose, with a black spot near the outer part, and the sides yellow. In the male the remaining segments as follows: Second segment with a broad light-yellow cross-band, interrupted in the middle, leaving a broad flattened triangle in front, opaque black, connected by a median stripe with a narrow posterior shining black cross-band; third segment with a similar yellow band, more narrowly interrupted, touching the front margin, rounded on the inner angles behind, and leaving a broader posterior shining black band; the opaque black is confined to a semicircular or semioval spot in the middle in front, separated from a smaller one behind by two intervening, oblique, yellowish pollinose, transverse, nearly contiguous spots; fourth segment narrowly yellow on the sides, across the middle a grayish-yellowish pollinose cross band, convex in the middle in front, broadly emarginate behind; the black shining; the posterior margin yellowish; hypopygium black, concealed beneath dense yellowish pollen. In the female the shining black cross-bands on the posterior part of the second and third segments is broader; the yellow cross-band of the third segment is narrower and more broadly separated, connected in the middle or nearly so by yellowish pollen; the black spot in front is usually not oval, but forming a more or less elongate band, attenuated on the sides, but not reaching the lateral margins; the next segment similar to that in the male, but the yellow pollinose band narrower and more gently bi-concave; fifth segment shining black, with a yellowish pollinose cross-band; the yellow on the sides of the fourth segment in both sexes may encroach on the ground of the cross-bands, and also similarly in the fifth segment in the female. Legs yellow; base of front and middle femora, distal end of the front tibiæ

and the whole of the front tarsi, the tip of middle tarsi and the whole of the hind legs, except the distal end of the femora and the base of tibiæ, black; the extreme tip of hind femora also black. Wings hyaline; stigma yellowish. Dorsum of thorax densely light yellow or ochraceous opaque, with three sub-opaque black stripes, of nearly equal width throughout, the middle one a little broader; pile yellow; pleuræ densely gray pollinose.

Twenty male and as many female specimens, collected chiefly from New England, where it is the most common species. In addition, fifteen specimens from the Rocky Mountain and Pacific regions, and twenty-four from Montana (Professor Comstock), do not differ from the eastern ones. Both this and the following are closely allied to *H. trivitattus*, *hybridus*, and *pendulus* from Europe.

Helophilus similis. (Plate VIII, fig. 2.)

Helophilus similis Macquart (non Curtis), Dipt. Exot., ii, 2, 64, 7. 1842.
Helophilus fasciatus Walker, List., etc., iii, 605.
Eristalis decisus Walker, List, etc., iii, 614.
Helophilus susurrans Jaennicke, Neue Exot. Dipt., 94.

Habitat.—New England, Canada, Indiana, Kansas, California!

♂, ♀. Length, 13 to 15mm. Very closely allied to *H. latifrons*, with which it may be readily confounded. It will, however, be at once distinguished by the front of the male being much narrower above, not more than a third or fourth as wide as the distance from the ocelli to the base of the antennæ, and in the female by the front being wholly black pilose; in the male the front is black pilose on the upper half; the antennæ are lighter colored, red, or yellowish red, except on the upper part of the third joint, where it is blackish; the yellow cross-bands of the second and third abdominal segments are not as broad, and the posterior black portion is broader; the hind tibiæ are usually red, or brownish red, with the basal third yellow; the pile of the scutellum is in larger part, sometimes almost wholly, blackish. Otherwise the species scarcely differs from *latifrons*.

Ten specimens from Connecticut, Massachusetts, Indiana, Kansas, Canada, and a single male from California. At the time Macquart named the species there existed another *H. similis* Curtis (Brit. Ent. 629, 5), now considered a synonym of *H. pendulus*, and hence need not interfere with the present.

Helophilus laetus. (Plate VIII, fig. 6.)

Helophilus laetus Loew, Centur., iv, 77.

Habitat.—Connecticut, New York!, Wisconsin, Illinois (O. S.).

♀. Length, 8.5 to 9mm. Face concave below the antennæ and then gently convex to the oral margin, wholly yellow, grayish-yellowish pollinose, on the lower part, in the middle, a narrow shining spot; cheeks black but not extending forward. Front black, thickly yellowish pollinose and wholly black pilose, except on the vertex. Antennæ yellowish red; arista black at the tip. Dorsum of thorax opaque black,

with four grayish-yellowish stripes; the middle pair not very broad, gradually dilated on the hind part, the median black stripe has in the middle a very slender grayish pollinose stripe, obsolete in front and behind. Scutellum yellow, narrowly black at the base and on the sides. Abdomen: First segment pollinose, except a black spot on each side; second segment with a broad, widely interrupted, yellowish-red cross-band, the posterior margin narrowly shining, in the middle with a yellowish spot; third segment similar, the cross-band very narrowly interrupted, with a moderately broad, biarcuate, opaque black cross-band behind the yellow, posterior margin of the segment narrowly yellow, broadly and angularly dilated in the middle and yellowish pollinose; on the fourth segment the yellow band is less wide, entire, touching the front margin on the whole length, narrowed in the middle, behind it an entire black cross-band, the sides of which are oblique; posterior margin more broadly yellow, behind the black an entire pollinose cross-band, narrow at the sides, broad in the middle; fifth segment wholly pollinose, the margins yellow. Legs reddish-yellow; base of front and middle femora, an incomplete median ring on the hind femora, tip of front tibiæ on the inner side, end of hind tibiæ and an incomplete subbasal ring, and the hind tarsi, black or blackish. Wings nearly hyaline.

♂. Face and lower part of front brighter yellow; front above, between the parallel orbits, black, lightly pollinose, with black pile, below on the yellow part the pile is yellow. Stripes of grayish pollen on the dorsum of the thorax narrowed, almost linear, the slender line in the middle of the median black stripe almost indistinguishable. Pile of thorax moderately long, yellow, across the disk of the scutellum somewhat intermixed with black. Abdomen: first and second segments as in the female, except that the yellow cross-band is broader and a little less widely interrupted; third segment with two large yellow spots, narrowly separated at the tips, leaving a slender, biarcuate cross-band of opaque black behind, narrower than in the female, connecting at their inner ends with the triangular or semi-oval spot in front, which is less transverse than in the female; the fourth segment wholly grayish pollinose, except a very slender, biarcuate black cross-band, connecting in the middle with a small spot in front, hind margin yellow; hypopygium black, wholly pollinose. Front and middle femora more broadly black at their base; hind femora black, except narrowly at the base, and a broad, preapical ring.

A single male specimen from Saratoga, N. Y., August 30, on meadow land, and a female from New Haven, which undoubtedly belongs to the same species, although the black of the femora is different in extent, and which in the male does not agree so well with Loew's description.

Helophilus chrysostomus. (Plate VIII, fig. 5.)

Eristalis chrysostomus Wiedemann, Auss. Zw. Ins., ii, 174, 30.
Helophilus chrysostomus Osten Sacken, Cat. Dipt., 133.

Habitat.—New England, New York!, Georgia (Wied).

♂, ♀. Length, 9.5 to 11mm. Front of male not broad, the sides parallel on upper half; on the lower half, like the face, of a fine light golden-yellow, with yellow dust and pile, not at all shining; on the upper half, in front of the ocelli, thickly covered with a brownish-yellow dust, the ocelli and vertex black, shining, and narrowly black pilose. In the female the front is broader, and wholly clothed with black pile, more abundant across the middle; the ground color is shining black, obscured by the pollen, which is less abundant and less yellow than in the male. Antennæ yellowish red; arista red at base. Face gently concave below the antennæ, then gently convex to the tip, the lower part considerably produced downwards and forwards; below shining black on the sides, back below the eyes on the cheeks obscured by pollen. In the female the yellow color of the face is concealed beneath more whitish pile, so that it does not have the bright color of the male. Dorsum of thorax light yellowish-olivaceous, with three broad, black, opaque, velvety stripes, rather narrowly separated, but more broadly so in the male than in the female; the outer stripes do not reach quite to the front and back margins; pleuræ pollinose. Scutellum shining black, the border red, pile yellowish. Abdomen in the male slender, narrowed at hind part of the second segment, yellowish and ferruginous-red; first segment grayish pollinose, except a small spot near the outer sides behind, continuous with the anterior angles of the black on the next segment; second segment broadly velvety black, extending nearly the whole width of the segment in front, thence narrowed so that at the middle of the segment it does not occupy more than one-third the width; then again expanding, usually of a less deep color (sometimes only brown or ferruginous); the broad hind margin of the segment shining red, the long lateral triangles are yellowish, along the black in front often white pollinose; third segment sometimes wholly and uniformly red, but more usually with a brownish or blackish spot in front in the middle, and a diffuse, indistinct, brownish cross-band before the broad shining hind margin, the sides in front, and two spots near the middle, of white pollen, are often present; fourth segment with a pair of small slender spots in the middle in front, and the anterior angles whitish pollinose, the extreme hind border of the fourth and fifth segments yellow. In the female the abdomen is broader, wholly black, with grayish-white cross-bands; first segment wholly dusted; second segment with a broad shining cross-band behind, elsewhere velvety black, except the oblique, pollinose, yellow side-spots; these spots reach along the sides to the front angle of the segment, obliquely concave in front; third and fourth segments similar, but the spots are very narrowly separated, beginning at the anterior angles, concave in front, convex behind, the shining part of the fourth segment is somewhat dusted; fifth segment wholly pollinose, except a narrow black cross-band in front. Basal half of the front and middle femora, hind femora, except the base and a preapical ring, the distal part of hind

tibiæ and the last four joints of hinc
tibiæ and their metatarsi more brown;
yellow, lighter on the front and middl
with a long stout obtuse process below,
base with a slight protuberance, hind
tip; all wanting in the female. Wings

This description is based on twelve m
that I caught about the blossoms of *Co*
of June, in Connecticut. From the col
I do not doubt but that it is Wiedeman
however, mistaken in the sex of his s
the process on the hind coxæ. In the f
cation of this process, but his descripti

Helophilus distinctus, n. sp.

Habitat.—Connecticut, Virginia, Pen

♂, ♀. Length, 7.5 to 10mm. Very
Wied., but easily distinguished in the m
form process on the hind coxæ below,
dorsal thoracic stripes being considera
ing gray ones; the middle black strip
grayish line. The face in the male i
ground color is almost wholly black.
the first two joints blackish. The bla
thorax are narrower; in the female ve
linose spots on the third and fourth
little broader and a little more widely s
coxæ below there is a small obtuse p
male of *H. chrysostomus;* in the fe
spur on the end of the hind tibiæ
over, smaller in size.

Four specimens, two of each sex
found common on a meadow near
recognizing it as distinct from *H.*
greater number of specimens. T
det" and the antennæ darker, no
can be Wiedemann's species.

Helophilus modestus, n. sp. (Plate

Habitat.—Wyoming!

♂, ♀. Length, 6 to 8 mm.
tle in the male, the ocelli
broad band of yellowish p
Antennæ black, the ar
below the antennæ, a
tubercle, between w

cross-band; the inner ends of the yellow spots are a little whitish dusted; third segment with two large yellowish-red, subtriangular spots, the posterior margin straight, more or less indistinct, their inner end whitish pollinose, separated by about the same width as the preceding, the inner anterior sides a little convex, the front ends slightly encroaching on the second segment, the narrow hind margin yellow dusted with whitish pollen, which expands somewhat in the middle elsewhere the black is opaque; fourth segment on the front half shining, on each side with a moderately broad, arcuated, pollinose spot the outer end attaining the anterior angle, posterior border yellow, and before it with a cross-band of about the same width, subopaque black the yellow is pollinose, encroaching somewhat on the black in the middle. In the female the color of the abdomen is less opaque, with pollinose markings as follows: First segment, except an oval spot on the sides; second segment with a slender convex spot on each side near the middle, the inner end widened, expanded on the sides in a slender triangle, the ground color of which is reddish yellow, posterior border in the middle also pollinose; third and fourth segments similar, the spots not so slender, the lateral reddish yellow spots smaller, and the posterior pollinose margin broadly dilated in the middle, so that in the fourth segment it is more than a third of the width of the segment; fifth segment wholly pollinose, except narrowly at the base. Legs reddish-yellow; a spot above on the front and middle femora, the tip of front tibiæ, and the distal joints of their tarsi, a large oval spot on the upper part of the hind femora, and the extreme tip black; a sub-base and a preapical ring on the hind tibiæ, and the hind tarsi brown. Wings nearly hyaline.

Although I have but two specimens (♂, ♀), from Connecticut, yet from comparison with European specimens and also with the full description of *H. lineatus* given by Loew (Stett. Ent. Zeit., vii), I am satisfied that this is not the same. The male differs in the much larger extent of yellow on the abdomen, and the thoracic stripes being more distinct; the female by the greater extent of pollen on the abdomen, and especially by the thoracic stripes, which are broad and distinct, a third of the width of the intervening black stripe; they are not diffuse on the posterior part, but are well defined quite to the scutellum; the intervening black stripe is narrowed in a lanceolate form at the tip, merely touching the scutellum in an acute point. In *H. lineatus*, on the posterior third, the stripes are widened in a more grayish color so as to leave only a slender line between them, apparent in well-preserved examples. The lower part of the face is less brownish in *H. conostomus*, and the legs have a less extent of black. I am not sure that all these differences—especially the latter ones, are constant.

Should the genus *Eurhimyia* Bigot be deemed admissible (I do not think that it is) this species would belong in it.

A single specimen without a head, of this species is in the Loew typical collection, bearing the label "Spec. indescr."

Helophilus hamatus.

Helophilus hamatus Loew, Centur., iv, 79.

Habitat.— Hudson's Bay Territory (Lw.)!

♀. Length, 8.5mm. Face strongly produced, subconic, cheeks black, no median stripe. Antennæ subochraceous. Front blackish, thinly clothed with ochraceous pollen near the antennæ, short black pilose. Dorsum of the thorax with four rather broad, ochraceous pollinose stripes, the intermediate ones cinerescent. Scutellum reddish. Abdomen with nearly parallel sides; first segment whitish-cinereous; the three following segments black, opaque, each with two whitish lunulate spots, the posterior margin shining; last segment cinereous pollinose. Legs luteous-brownish; femora with black markings, hind tibiæ with two fuscous rings, the front and hind tarsi wholly and the tip of the middle tarsi fuscous-black. Wings cinereous hyaline, stigmatic spot subfuscous.

Translation from the original, compared with the type specimen at Cambridge.

Helophilus divisus.

Helophilus divisus Loew, Centur., iv, 78.

Habitat.—District of Columbia (Lw.)!

♀. Length, 9mm. Face less projecting than in *H. obsoletus, integer*, and *lætus*, the antennal arista black, the abdominal lunules narrow, the cinereous wings and the markings of the legs are all different. Pile of the front black, above rather long, at the vertex luteous. Dorsum of the thorax with very short luteous pile, that of the scutellum longer. Four broad stripes and a narrow median stripe, attenuated at each end, luteous pollinose. Basal margin of the scutellum black. Luteous fasciæ of the abdomen very narrow, broadly interrupted, so that each is divided into two moderately curved lunules; posterior margins of the second, third, and fourth segments obsoletely lutescent, fasciate with subcinereous pollen. Pile of the abdomen nearly wholly black. Legs luteous; the hind ones more obscure, the femora, except the base and tip, fuscous, at the base with a small black spot; basal half of the four front femora black; tip of front tibiæ and last two joints of the four front tarsi blackish; hind tibiæ near the base with a subfuscous ring, and the apical third black, hind tarsi black. Wings cinereous.

Translation from the original, compared with the type specimen at Cambridge.

Helophilus integer.

Helophilus integer Loew, Centur., iv, 76.

Habitat.—New York (Lw.)!

♀. Length, 9 to 10mm. Very similar to *H. obsoletus*, but the pile of the whole body much shorter, and the four dorsal luteous pollinose stripes rather broad and very distinct. Scutellum at the base black. Luteous fasciæ of the abdomen broad, the first narrowly interrupted, the

remainder entire; each segment, except the first, with a median subtriangular spot ochraceous pollinose and contiguous with the hind margin; hind margin of the third segment narrow, of the fourth segment broad, luteous. Legs luteous; front femora near the base with a black spot; hind femora near the base with a minute blackish spot, above in large part black and near the tip on each side with a fuscous spot; hind tibiæ near the base with a fuscous ring, at the tip blackish fuscous; hind tarsi wholly blackish fuscous.

Translation of the original, compared with the type specimen at Cambridge.

Helophilus obscurus.

Helophilus obscurus Loew, Centur., iv, 74.

Habitat.—Colorado (O. S.)!

♀. Length, 10mm. Black and yellow varied. Face somewhat projecting, with the cheeks and a rather broad median stripe black. First two joints of the antennæ brownish-black, third joint red, more obscure on the upper portion. Dorsum of thorax with four yellow stripes, the intermediate ones slender. Scutellum yellowish testaceous. Abdomen black, opaque, the posterior margins of the segments moderately shining; with four yellow, interrupted cross-bands, the anterior ones of moderate width, the posterior ones narrow. Femora black, the tip of the front and middle pairs and a subapical ring on the hind pair luteous; front tibiæ and tarsi wanting; middle tibiæ and metatarsi luteous, remaining joints of the tarsi black; hind tibiæ black, base luteous, and a median ring brown, tarsi wholly black. Wings cinereous hyaline, near the costa very dilutely brownish, stigma subfuscous.

Translation from the original, compared with the type specimen at Cambridge. A second specimen has the front and middle femora black, except the tip, and their tibiæ and tarsi yellow, except that the front tibiæ are brownish in the middle.

Helophilus obsoletus.

Helophilus obsoletus Loew, Centur., iv, 75.

Habitat.—Hudson's Bay Territory (Lw.)!

♀. Length, 9mm. Two slender stripes of the dorsum of the thorax luteous pollinose, obsolete. Basal margin of the scutellum black. Luteous fasciæ of the abdomen of moderate width, the first broadly, the second narrowly interrupted, the third entire; each segment, except the first, with a posterior luteous margin, and a triangular spot contiguous with it of the same color. Legs luteous, the color of the hind pair darker; front femora near the base with two minute black spots, hind femora on the posterior side with a large black spot; hind tibiæ near the base with a brownish ring, and at the tip blackish; hind tarsi wholly black. Pile of the whole body a little longer than in the female of *H. integer* or

n from the original, compared with the type specimen at

Helophilus porcus.

Eumerus porcus Walker, List, etc., iii, 551.

Habitat.—Hudson's Bay Territory (Walker).

"♀. Length of the body 3–4 lines; of the wings [spread] 6–7 lines. Niger, thorace cinereo quadrivittato, abdomine maculis nigris nitentibus canisque ornato, antennis piceis, pedibus nigris, genubus tarsisque ferrugineis, alis subcinereis.

"Body black, clothed with black hairs; head covered with white bloom, and clothed with white hairs beneath, pale yellow in front and around the base of the feelers; mouth black; feelers pitchy; bristle black; eyes brassy black; all the facets small; chest adorned with four gray stripes; breast tinged with gray; abdomen elliptical, deep velvet-like black, longer and a little broader than the chest; each segment adorned with a triangular, black, shining spot in the middle, and with a hoary spot on each side; hind borders shining; legs black; knees and feet ferruginous, the latter pitchy towards the tips; foot-cushions and claws tawney; tips of the claws black; hind thighs thick, unarmed; hind shanks curved; wings pale gray; wing-ribs and veins black; veins pitchy towards the base; poisers yellow."—Walker, l. c.

"Is a very peculiar species; it is represented in the British Museum by two (♂ and ♀) well-preserved specimens. I have never seen it elsewhere."—Osten Sacken, Cat. Dipt., 250, note 235.

Helophilus flavifacies.

Helophilus flavifacies Bigot, Ann. Soc. Ent. Fr., 1883, 344.

Habitat.—Maryland (Bigot).

♂. Long. 9^{mm}. Antennis testaceis; facie pallide flava, fronte superne fusca; thorace nigro, vittis quatuor flavis; scutello fulvo; abdomine nigro, utrinque tribus maculis trigonis, marginibus segmentorum 3 et 4, 5° toto, flavo pictis; calyptris et halteribus testaceis; pedibus pallide fulvis, femoribus posticorum apice, tibiis id. basi et apice, fusco annulatis, tarsis posticis obscure fulvis; alis pallidissime flavis.

Antennes fauves; face d'un jaune blanchâtre; front de même couleur, la moitié supérieure brune; thorax d'un noir opaque avec quatre bandes longitudinales jaunes, flancs couverts d'un duvet jaunâtre; écusson fauve, légèrement teint de noirâtre à la base et sur les côtés; abdomen d'un noir opaque, les segments 2°, 3° et 4° avec, de chaque côté, une macule trigonale, la moins grande au 3°, fauves, bords postérieurs des 3° et 4° segments testacés, 5° entièrement d'un jaune testacé; pieds d'un fauve pâle, les postérieurs avec *trois* anneaux bruns, l'un, sis à l'extrémité des cuisses, les deux autres, sur les tibias, tarses postérieurs d'un fauve brunâtre; ailes très légèrement jaunâtres. 1 specim.—Bigot, l. c.

Helophilus Novæ Scotiæ.

Helophilus Novæ Scotiæ Macquart, Dipt. Exot., 2° Suppl., 60, 10.

Habitat.—Nova Scotia (Macq.).

♀. Long. 12.5^{mm}. *Ater. Thorace vittis flavis. Abdomine fasciis albidis. Antennis pedibusque nigris; tibiis basi rufis.*

Face et front jaunes, à duvet blanchâtre et bande noire; style des antennes brun. Côtés du thorax noirs; écusson brun. Les bandes de l'abdomen étroites; celles des premier et deuxième segments élargies et fauves sur les côtés; ventre noir, à incisions blanchâtres. Jambes intermédiaires fauves, à extrémité brunâtre. Ailes assez claires; première nervure transversale située au-delà de la moitié de la cellule discoïdale.

ADDITIONAL NORTH AMERICAN SPECIES.

Helophilus formalis [*femoralis*] Walker, List, etc., iii, 603.—Mexico.

Helophilus Androclus Osten Sacken, Cat. Dipt., 250, note 230; Walker, List, etc., iii, 612 (*Eristalis*).—British Possessions.

Helophilus frater Osten Sacken, Cat. Dipt., 250, note 230; Walker, List, etc., iii, 613 (*Eristalis*).—Hudson's Bay Territory.

Helophilus chalepus Osten Sacken, Cat. Dipt., 250, note 230; Walker, Dipt. Saund., 247 (*Eristalis*).—Canada.

Baron Osten Sacken from an examination of the types of these species, described as *Eristalis*, ascertained that they belong to the group of *H. borealis*, *groenlandicus*, and *glacialis*. They cannot be recognized from the descriptions.

PTERALLASTES.

Pterallastes Loew, Centur., iv, 80, 1863.

Head broader than the thorax, much flattened. Eyes bare, broadly contiguous in the male. Frontal triangle small, antennal prominence short, obtuse. Antennæ inserted rather below the middle of the head in profile, rather small; first two joints short, third joint rounded; arista basal, bare. Face in the male nearly perpendicular, not descending far below the eyes, in profile gently concave above and more gently convex below, arched, not carinate; in the female concave; obliquely truncate below; cheeks narrow, the lower border forming with the plane of the occiput a little more than a right angle. Scutellum wholly yellowish opaque like the dorsum of the thorax. Abdomen elongate ovate, nearly twice as long and broader than the thorax, broadest at tip of second segment, thence gently narrowed to the tip of the fourth. Legs wholly unarmed, rather stout; hind femora moderately thickened, elongate, below with short bristly hairs; hind tibiæ considerably arcuate, flattened. Marginal cell of wing open, third vein with a deep sinuosity into the first posterior cell; anterior cross-vein very oblique, near outer third of discal cell, last section of fourth vein strongly sinuate, terminating near the tip of third vein; sixth vein nearly straight.

Large, rather thickly pilose, moderately elongate species. Thorax densely yellowish pollinose; abdomen black, shining. Type of genus *P. thoracicus* Loew, North America.

Pterallastes thoracicus. (Plate VIII, figs. 9, 9*a*.)

Pterallastes thoracicus Loew, Centur., iv, 80.

Habitat.—Pennsylvania!

♂. Length, 9 to 12.5^{mm}. Face black, rather thickly covered with gray

ish pollen, the cheeks bare and shining. Antennæ reddish-brown. Frontal triangle more thickly clothed with yellowish dust. Thorax and scutellum very thickly clothed with opaque, ochraceous pollen, leaving only a faint, slightly brownish, median stripe; pile abundant, not very long, wholly yellow. Pleuræ black, lightly dusted, moderately shining, except a brown stripe down the middle, which is thickly gray pollinose and gray pilose. Abdomen brownish-black, wholly shining; pile yellow, broadly black pilose on the middle of the fourth segment behind. Legs black; coxæ rather thickly gray pollinose, the knees narrowly on the front legs, knees and base of tibiæ on the middle and hind legs and their tarsi, light yellow, the extreme tip of four hind tibiæ sometimes yellow, and the front tarsi somewhat reddish below. Wings distinctly infuscated, especially beyond the anterior cross-vein; faint clouds on all the cross-veins.

♀. Face concave; front of moderate width, thickly luteous pollinose a large black spot above the antennæ black, shining, vertex black. Loew, l. c.

I have two male specimens from Mr. E. Keen, of Philadelphia. Loew describes the abdomen as "shining black, obsoletely bluish."

TEUCHOCNEMIS.*

Teuchocnemis Osten Sacken, Bull. Buff. Soc. Nat. Sci., iii, 58, 1876; Cat. Dipt., note 237, p. 250.

Rather large, elongate, moderately pilose species, black and yellow. Head short; face not tuberculate, not produced; the margin of the cheeks forming not much more than a right angle with the plane of the occiput. Antennæ short, third joint transverse; arista bare. Legs stout, hind femora thickened, especially in the male. Hind tibiæ arcuate and provided with a stout, internal, median spur in the male. Marginal cell of wings open, third vein with a moderately deep curve into the first posterior cell.

Type of genus, *T. lituratus* Loew, North America.

This genus cannot be separated easily from *Mallota*, and may have to be abandoned. The character upon which Osten Sacken based it, was the peculiar spur on the internal part of the hind tibiæ; but, as will be seen, this character occurs, apparently as only a dimorphism, in *Mallota cimbiciformis*, and hence has no value here as a distinguishing mark. The species are much more bare than in our species of *Mallota*, and the general habitus, especially of *T. bacuntius*, is very different. The last species reminds one forcibly of the more *Milesia*-like forms.

TABLE OF SPECIES.

Abdomen wholly black	**lituratus**
Abdomen in large part yellow or luteous	**Bacuntias**

* Τεῦχος, armor; κνημη, tibia.

Teuchocnemis lituratus. (Plate VIII, figs. 12, 12a.)

Pterallastes lituratus Loew, Centur., iv, 81.

Teuchocnemis lituratus Osten Sacken, Bull. Buff. Soc. Nat. Sci., 58, 1876; Cat. Dipt., 250.

Habitat.—Pennsylvania, Connecticut, Missouri!

♂, ♀. Length, 10 to 12mm. Black, moderately shining. Head dilutely luteous or yellow; occiput, except the margin, cinereous, opaque; cheeks black, shining. Antennæ scarcely darker than the face. Dorsum of thorax with grayish or yellowish-gray pollen and thin obscure yellowish pile, subopaque; on each side of the middle a slender opaque black stripe, abbreviated both in front and behind; just above the wing a reddish elongate spot, and the humeri also sometimes of the same color. Scutellum luteous, the base blackish. Abdomen black, somewhat shining, with short, thin, white pile. Legs black; front femora at the ends and more or less below, base of their tibiæ, middle tibiæ for the larger part, and the middle tarsi, except the tip, hind femora at base, along the under sides, the tibiæ at base and tip, and the tarsi except the tip, light yellow; in the female the hind legs may be wholly reddish-yellow, except the tip of tarsi. Wings brownish, with an elongate hyaline spot in the first and second basal cells; narrow clouds along the base of the first and fifth veins.

Two specimens, New Haven, Conn., and Missouri (Mr. Theo Pergande).

Teuchocnemis Bacuntius. (Plate VII, fig. 6.)

Milesia Bacuntius Walker, List, etc., iii, 563.

Teuchocnemis Bacuntius Osten Sacken, Bull. Buff. Soc. Nat. Sci., iii, 58; Cat. Dipt., 135, notes 237, 238, p. 250.

Habitat.—Georgia, Texas!

♂, ♀. Length, 12mm. Face light yellow, thinly light-yellow pollinose Antennæ reddish yellow; cheeks and occiput reddish yellow, narrowly whitish pollinose along the orbits. Front of female like the face; pile light yellow. Dorsum of thorax black, the broad lateral margin extending a little inwards at each humerus, and a large triangular spot in front of the scutellum, the scutellum and a large spot on the mesopleuræ yellowish red; pile of dorsum moderately abundant, erect, yellow. Abdomen brownish black, the lateral angles of the first segment, the second, third, and fourth segments with two very large coalescent spots, extending from the posterior nearly to the anterior margin, but broadly connected behind, and the fifth segment wholly reddish yellow; in some specimens the picture is not distinct, and the yellow more or less broken up in brown, in part perhaps due to the effect of drying. Legs reddish yellow, the base of all the tibiæ pure yellow. Hind femora in the male very much swollen; in the same sex the coxæ are provided with an obtuse tubercle, and the tibiæ on the front side, near the middle, have a strong projecting tubercle; in the female the femora are only a little thickened, and the tibiæ are not provided with the spine. Wings strongly tinged with brownish, especially in front, a streak along
st basal cell nearly hyaline; third longitudinal vein with a rather
rvature into the first posterior cell.

Two specimens (♂ and ♀) in Baron Osten Sacken's collection at the Museum of Comparative Zoology, bearing the label "Dallas, Tex., Boll.," and a specimen in Professor Riley's collection.

MALLOTA.*

Mallota Meigen, Syst. Beschr., iii, 377, 1822.

Head somewhat flattened, broader than the thorax. Face concave below antennæ and with a large obtuse tubercle; antennæ short, third joint broader than long, arista bare. Eyes in the male contiguous or separated only by a sutural space; pilose or naked. Scutellum large. Abdomen short, much convex above. Legs strong, hind femora extraordinarily thickened and bent, the hind tibiæ sometimes with a stout spur in the middle in front in the male. Wings with the marginal cell open; third longitudinal vein deeply bent into the first posterior cell; the fourth vein terminates near the tip of the third; anterior cross-vein oblique, situated near the middle of discal cell. Large, black, shining species, densely pilose.

TABLE OF SPECIES.

1—Eyes pilose; more or less of the base of the abdomen with yellow pile, **posticata**

Eyes bare; abdomen wholly black pilose **2**

2—Eyes of male separated by a narrow suture in front of the ocelli; wings with a distinct brown spot . . . . . **Sackeni**

Eyes of male quite contiguous; wings indistinctly, or not at all spotted. Hind tibiæ of the male with a stout spur in the middle (form *Bautias*), or wholly without such spur . . . . . **cimbiciformis**

Mallota posticata. (Plate VIII, fig. 13.)

Eristalis posticatus Fabricius, Syst. Antl., 237, 21; Wiedemann, Auss. Zw. Ins., ii, 194, 62 (translation from Fabricius).

Milesia barda Say, J. Acad. Phil., vi, 163; Compl. Wr., ii, 357 (male, not female).

Eristalis coactus Wiedemann, Auss. Zw. Ins., ii, 165.

Imatisma posticata Macquart, Dipt. Exot., ii, 2, 68 (male, not female).

Merodon Balanus Walker, List, etc., iii, 600.

Merodon bardus Packard, Guide Study Ins., 399, fig. 319; Amer. Nat., ii, Jan., 1869, 593; pl. 12, figs. 10, 10*a*; Glover, MS. notes Jour. Dipt., 1874, p. 32; pl., viii, fig. 30.

Mallota barda Osten Sacken, Cat. Dipt, 135, 249.

Mallota posticata Williston, Berl. Ent. Zeit., xxvii, 170; Lintner, First An. Rep., 211, fig. 64.

Habitat.—New England, Canada, New York, Kansas!, Indiana (Say).

♂, ♀. Length, 11 to 15^{mm}. Eyes pilose, contiguous in the male for a little longer distance than in *M. cimbiciformis*. Face black, with light yellowish-white dust and pile, median stripe and cheeks shining; frontal triangle clothed with the same dust as the face, except just below the base of the antennæ, where it is shining, pile yellowish or blackish; vertex black, with black pile. Front in female clothed with black pile, more or less intermixed with yellow; pile of occiput yellow, blackish

* Μἀλλωτός, woolly.

towards the top. Antennæ brown or blackish, third joint nearly orbicular. Thorax black, opaque on the disk, in front and on the sides brownish when denuded; dorsum thickly covered with bright yellow furry pile, less abundant on the middle, where it is sometimes intermixed with black, or not seldom quite black. Scutellum yellow, black at base; pile yellow. Abdomen black, with abundant black and yellow pile; the yellow pile varies much, usually it is confined to the first and basal part of the second segment, at other times comprising nearly the whole of the third segment. When denuded of pile the abdomen often shows considerable red on the second and third segments. Legs black; tips of femora, the tarsi, and sometimes a large portion of the tibiæ, red; pile chiefly black, but with more or less yellow, especially on the front and middle pairs; hind femora much swollen, arcuate in the male, hind tibiæ compressed, especially in the male. Wings nearly hyaline, usually with a small, faintly brownish spot opposite the tip of the auxiliary vein.

This fly shows a striking resemblance to *Eristalis flavipes*, with which, indeed, it was confounded by Say in his description of *Milesia barda*, the female of which belonged to the former, the male to the present species. They are not only strikingly similar in appearance, but they vary in the same way, namely, in the amount of yellow and black pile on the thorax and abdomen. Thus, as I have shown elsewhere, *Eristalis melanostomus* is a simple variety of *E. flavipes*, corresponding quite to *M. posticata*, variety *barda* of Say. I have found the species rather common in Connecticut. The description is based chiefly upon fifteen specimens collected in June, from about blossoms of the blackberry and dogwood (*Cornus paniculata*), in company with *M. cimbiciformis*. Other specimens I have compared from Canada (William Brodie), New York (Professor Lintner), Kansas (Professor Popenoe), and Pennsylvania (E. Keen).

For discussion of the synonymy of this species see the following:

Mallota cimbiciformis. (Plate VIII, fig. 11, and Plate IX, fig. 8.)

Syrphus cimbiciformis Fallen, Syrph., 27, 18.

Eristalis cimbiciformis Meigen, Syst. Beschr., iii, 385, 3.

Imatisma posticata, Macquart, Dipt. Exot., ii, 2, 68 (female only); tab. xii, fig. 2; Loew, Neue Beitr., iv, 17; id., Amer. Jour. Sci., 2nd series, xxxvii, 317.

Mallota posticata Schiner, Dipt. Austr. in Verh. Zool. Bot. Gesells., vii, 402; id., Fauna Austr., i, 343; Osten Sacken, Cat. Dipt.

Mallota cimbiciformis Schiner, Nov. Exped., 360; Williston, Berl. Ent. Zeitschrift, xxvii, 171.

Merodon Bautias Walker, List, etc., iii, 600.

Mallota Bautias Osten Sacken, Cat. Dipt. and note 239, p. 250; Karsch, Berlin Ent. Zeit., xxvii, 172.

Mallota atrox (Berlin Museum) Karsch, l. c.

Mallota dentipes (Williston) Lintner, First An. Rep. of the Entomologist, 211.

Habitat.—Georgia, Indiana, Pennsylvania, New York, Connecticut, New Hampshire, Canada!

♂, ♀. Length, 13 to 16mm. Eyes bare, contiguous for a short distance below the ocelli in the male. Front in female narrowed above, black, shining, except on the sides below the ocelli, where it is narrowly but thickly dusted, like the face; pile black, intermixed with yellowish across the middle and at the vertex. In the male the frontal triangle is thickly dusted like the face, except just above the base of the antennæ; the pile is usually black, sometimes almost wholly yellowish. Face deeply concave below the antennæ to tip of tubercle, produced moderately downward, thickly covered on the sides with grayish or whitish pollen, leaving a broad median stripe and cheeks shining black. Antennæ brownish-black, the third joint somewhat reddish; arista reddish. Posterior orbits thickly dusted with whitish. Dorsum of thorax in its ground color moderately shining on the disk, pollinose in front, the color concealed beneath thick, furry, light-yellow pile. Scutellum light yellow, with similar colored pile; pile of pleuræ thicker and a little lighter colored. Abdomen short, convex, obtusely conical, deep shining black, with short, erect, black pile, longer towards the tip; the first segment is grayish pollinose, and the pile slightly intermixed with whitish; venter black, the basal segments more or less pale. Legs deep black, with black pile, the tarsi dark reddish, slightly or not all so, however, on the hind pair; posterior femora very much thickened; in the male extraordinarily so, and arcuated; posterior tibiæ compressed, especially in the male. Wings hyaline, sometimes with a distinct brown spot near the furcation of the second and third veins and the tip of the auxiliary vein.

Form *cimbiciformis*. Hind tibiæ in male moderately compressed, wholly without a spur in the middle; usually smaller specimens.

Form *Bautias*. Hind tibiæ in the male extraordinarily compressed, and with a stout angular projection in the middle, which, when the tibia is flexed, lies on the outer side of the femur; usually larger specimens.

A very singular species, which is apparently dimorphic in the male. Of the form without the spur I have two males taken in company with two other males of the spurred form, June 20, near New Haven, about the blossoms of *Cornus paniculata*. They are smaller than the smallest of all my spurred specimens, but otherwise I can see no differences whatever. With these four males just mentioned I captured four females, all of which were larger than the unspurred males. A single female from Indiana, however, agrees very well in size with these unspurred males, but shows no other differences from the other females. I have also six males and an equal number of females, all of them large and all of the males with spurs, collected near the base of Mount Washington, July 25–28. Another spurred male I have seen from Pennsylvania (E. Keen) and a female from Canada (William Brodie).

There are some minor differences in these specimens which it will be worth while to notice. The pile of the legs is usually wholly black, at

other times much intermixed with yellow; the same may be said of the black pile of the front. The black pile of the posterior part of the abdomen is sometimes a little intermixed with reddish, but in none do I find any but black pile on the second segment, a fact which will readily enable the species to be distinguished from *M. posticata*.

In the synonymy of the species there has been much confusion. The first one who published anything in regard to American specimens was Macquart. He, unfortunately, from their close resemblance, supposed the single female specimen which he examined to belong with the male type of Fabricius' *Eristalis posticatus*, at that time in Bosc's museum, at Paris, and which he used in describing the species. In the present species the eyes are bare, while in Fabricius' types the eyes are pilose, according to Macquart; this, together with the fact that the base of the abdomen is never yellow pilose (the sparse light hairs on the first segment are very inconspicuous), renders it certain that the present cannot be *Eristalis posticatus* Fabr., as has been supposed by later authors. On the other hand, there can hardly be any doubt that the species described by Say as *Milesia barda* (male) is the true *E. posticatus* of Fabricius.

The description of *cimbiciformis* as given by Fallen does not quite agree with this, and comparison is needed with European specimens before the identity can be actually settled or denied. Loew believed the species to be the same.

The flight of this fly is a little peculiar, and will enable one to readily distinguish it from its very near ally, *M. posticata*. It flies with a loud buzz, going here and there, in and about the patches of flowers.

Mallota Sackeni. (Plate VIII, fig. 14.)

Mallota posticata Osten Sacken, West. Dipt., 338.
Mallota Sackeni Williston, Proc. Am. Phil. Soc., xx, 324.

Habitat.—Washington, Texas!

♂. Length, 14mm. Closely allied to *M. cimbiciformis*, but differs in the presence of a dark brown spot on the wings, and in the eyes of the males being distinctly separated.

Face black, covered with thick light yellow pollen and pile, a broad median stripe and the cheeks shining. Antennæ black, the third joint more brownish, the angles apparently less rounded than in the preceding species. Frontal triangle covered with the same dust and pile as on the face, except in the middle where it is shining. Eyes bare, convergent below the ocellar triangle, but separated by a very distinct interval. Thorax black, thickly covered on the dorsum, scutellum, and pleuræ with erect, furry, light yellow pile; scutellum light yellow. Abdomen black, shining, clothed with black pile; on the first segment slightly intermixed with light colored. Legs black; extreme tip of [illegible] base of tibiæ, and the tarsi, obscure yellowish. Hind femora [illegible] and bent, hind tibiæ compressed. Wings hyaline with a

rge brown spot, extending from the furcation of the second and third eins to the anterior cross-vein and from the costa to the base of the hird posterior cell. Marginal cell closed in the costa.

One specimen.

It is not impossible that more material will render these characters f less value in separating this species from the foregoing.

Four males from Waco, Texas, in the National Museum, since examined, all agree in the dichoptic character, and the brownish spot on he wings. The marginal cell is open. The body is more elongate, and he pile of the thorax more fulvous than in *M. cimbiciformis*.

Mallota bipartita.

Merodon bipartitus Walker, List, etc., iii, 599.
Mallota bipartita Osten Sacken, Cat. Dipt., 135.

Habitat.—Georgia (Walk.).

"*♂. Niger, antennis piceis setis fulvis, pedibus nigris tibiis basi pedisque subtus ferrugineis, aliis subcinereis fusco ad costam unimaculatis.*

"Body black, head shining, clothed with tawny and black hairs, rominent about the mouth, which is black; feelers pitchy; bristle awny; eyes black; all the facets very small; chest thickly clothed ith yellowish-white hair; abdomen linear, shining, a little longer and roader than the chest, thinly clothed with short tawny hairs, covered ore thickly toward the tip with black hairs; legs black, clothed with hort black hairs; shanks ferruginous towards the base; feet ferruinous beneath; claws and foot-cushions tawny; tips of feet black; ings slightly gray with a small brown spot under the middle of the re-border; wing-ribs and veins pitchy; veins tawny toward the base nd along the fore-borders; poisers tawny. Length of the body, 4½ nes; of the wings, 10 lines." Walker, l. c.

"*Merodon Bautias* Walker is represented in the British Museum by a ingle male specimen; *M. bipartitus* by four specimens, two of which eem to be females of *M. Bautias;* the two others may be a different pecies." Osten Sacken, l. c.

TRIODONTA.*

Polydonta Macquart (non Fischer), Dipt., Exot. 4e Suppl., 144, 1850.
Triodonta Williston, Bull. Brookl. Entom. Soc., vii, 136, 1885.

Differs from *Mallota* in the eyes of the male being broadly separated, are; in the male hind coxæ, hind femora, and tip of hind tibiæ being rovided with spurs or protuberances; in the abdomen of the male being narrowed posteriorly, and in the general pilosity being much less. n our single species the color of the abdomen in the two sexes is strikngly different.

* *Τριόδους*, with three teeth.

Triodonta curvipes. (Plate IX, figs. 1, 1*a*, 1*b*, 1c, 1*d*.)

Merodon curripes Wiedemann, Auss. Zw. Ins., ii, 149, 3.

Helophilus albiceps Macquart, Dipt. Exot. 1er Suppl., 132, 9; pl. fig. 7.

Polydonta bicolor Macquart, Dipt. Exot. 4e Suppl., 144, 1; pl. xiii, fig 6.

Polydonta curvipes Osten Sacken, West. Dipt., 338; Williston, Proc. Am. Phil. Soc., xx, 324.

Habitat.—New England!, Colorado, California (O. S.).

♂, ♀. Length, 10 to 13mm. Face black, shining on the tubercle and the cheeks; elsewhere thickly covered with yellowish pollen and pile. Antennæ black; arista yellowish at the base and end. Front in male black on the upper part and above the base of the antennæ; elsewhere covered with yellowish dust. In the female the front is broad, shining in the middle below, blackish above, pile near the ocelli blackish; on the occiput white. Thorax black, covered thickly with a brownish dust, leaving faint indications of a slender median and lateral stripes, and with short, rather abundant, obscure, yellow pile. Pleuræ dusted with white; scutellum sub-translucent yellow. Abdomen with short pile; in the male as follows: First segment black; second segment black in front, except at the sides, dilated in the middle in a broad sub-triangular spot, reaching two thirds of the length of the segment; remainder of the abdomen yellowish red; in the female black, partly shining; first segment and second, except posterior part, thickly dusted with grayish; third and fourth segments on the front part with a broad interrupted band of the same dust; on the fourth sometimes only two rounded spots. Legs black; tip of femora and base of tibiæ yellowish red. Wings nearly hyaline.

Numerous specimens.

TROPIDIA.*

Tropidia Meigen, Syst. Beschr., iii, 346, 1822.

Medium sized, nearly bare species; black, with yellow markings on the abdomen. Head hemispherical, somewhat broader than the thorax. Antennæ short, third joint rather large, not much longer than broad, the anterior angles only a little rounded; arista bare. Face with a median keel-like ridge; not produced, obliquely truncate; cheeks narrow below the eyes. Eyes bare, contiguous in the male. Thorax short and rather broad. Scutellum large, its border thin; more or less yellow. Abdomen narrow, somewhat elongate, of nearly equal width, depressed. Wings folded together in rest; marginal cell open, third vein with a moderate curvature, sometimes deeply bent into the first posterior cell, anterior cross-vein beyond the middle of discal cell, oblique. Legs strong; hind femora extraordinarily thickened, below near the outer end with an angular projection; hind tibiæ bent.

* Τροπιδια, a keel.

TABLE OF SPECIES.

—Femora black, at the tip testaceous; the hind femora below, near the base, with a strong mammiform process (♂) . . . . . **mamillata**
—Front and middle femora yellow on distal end; hind femora without such process near the base . . . . . **quadrata**
—Antennæ large, reaching nearly to the oral margin; hind coxæ of male with a large obtuse spur . . . . . **calcarata**

opidia quadrata. (Plate IX, figs. 2*a*, 2*b*.)

Xylota quadrata Say, Amer. Ent., i; tab. viii; Compl. Wr., i, 14; Wiedemann, Auss. Zw. Ins., ii, 101, 6 (translation from Say).
Tropidia quadrata Macquart, Dipt. Exot., ii, 2, 72.
? *Tropidia albistylum* Macquart, Dipt. Exot. 2e Suppl., 60, 1; tab. 2, fig. 10.

Habitat.—New England, Canada, Washington Territory!

♂, ♀. Length, 9 to 12^{mm}. Front in female narrow above, black, shining low and at the vertex, on the sides thickly yellowish gray-dusted; pile ry short and sparse, yellowish. Vertical triangle small, black, with ack pile; frontal triangle small, colored like the face. Face gently con- x in profile in the male, a little concave near the middle in the female; color reddish or brownish yellow, densely covered with yellowish ay pollen, leaving a slender median stripe shining black, a stripe spot on the cheeks also black. Antennæ reddish yellow, the third nt nearly square. Dorsum of thorax shining, greenish black, with o rather distinct median pollinose stripes, narrowly separated, be- ming obsolete near the middle; two spots of the same colored pollen front of the scutellum, another in front of each post-alar callus, on the meri, and a spot along the dorso-pleural suture immediately behind humeri. Pleuræ wholly thickly whitish pollinose. Scutellum yel- w along the border. Abdomen reddish-yellow; in the male the first gment black, whitish pollinose, yellow on the sides; second segment front (but not reaching the sides) and a narrow median stripe black, hind extending narrowly to the sides, more brownish, or only ghtly brownish, except at the outer ends, forming an inverted T, terior margin of the segment yellow; third segment with a median rrower black or brown stripe, not reaching the front, and on the d part more or less indistinctly brownish like the preceding; fourth gment on the disk mostly brownish-black with yellowish pollen. In female the black on the second segment is broader; the third seg- nt black, except a quadrangular spot in front on each side, and the d margin, yellow. Front and middle legs, on the basal half or more of femora, black, reddish yellow elsewhere, except that the tibiæ may somewhat brownish before the tip. Hind legs black, the knees only llow. Wings hyaline, third longitudinal vein moderately bent into e first posterior cell.

Twenty-nine specimens, Canada (Brodie), Washington Territory (Mor- m), Connecticut.

The synonymy of *T. albistylum* seems probable; the only difference

that the description seems to indicate is that the front and middle f mora are more broadly yellow. The third longitudinal vein of the wi is represented straight in his figure, but Macquart's figures general are unreliable.

Tropidia mamillata.

Tropidia mamillata Loew, Centur., i, 68.

Habitat.—Illinois!

♂. Length, 8mm. Face carinate, with whitish pollen. Antenn light ochraceous. Dorsum of thorax blackish bronze, shining. Pleur cinereous pollinose. Abdomen near the base black, near the tip fuscous with two interrupted reddish bands. Femora black, at the extrem tip testaceous; hind femora on the lower side near the base armed wit a strong mammiform process. Front and middle tibiæ simple, reddis yellow; hind tibiæ dilated, arcuate, fuscous black, base and upper sid reddish, the tip produced into a tooth. Tarsi reddish-yellow, fourt joint black, the fifth joint in the hind pair or in all fuscous. Halter whitish. Wings cinereous hyaline; stigma yellow.

Translation, compared with the type. Will be very readily recog nized by the mammillate tubercle on the under and inner side of the bas of the hind femora; it is long and directed inwards and backwards.

Tropidia calcarata, n. sp.

Habitat.—Michigan!

♀. Length, 9mm. Head black; face and front lightly gray pollinose Antennæ brownish yellow; third joint very large, reaching nearly t the oral margin, subquadrate; arista black. Face but little produce below the eyes, the lower margin of the cheeks nearly straight an perpendicular to the plane of the occiput. Thorax black, but litt shining; humeri and pleuræ pollinose. Abdomen opaque, black, o dark brown, the lateral margins of the second and third segment (broader in front of each) yellow; both of these segments with linea hind margins; fourth segment almost wholly light-grayish pollinose with a yellow hind margin. Legs dark-brown or black, the base o tibiæ, and the three basal joints of front and middle tarsi, yellow Wings brownish, clouded on outer half.

♂. Third antennal joint smaller. The yellow margins of the secon and third abdominal segments extend further inward. Hind cox with a large obtuse spur; hind tibiæ with a terminal spur.

One male, three females, Galesburg, Michigan (Dr. Dimmock National Museum, Prof. Riley's collection).

The third joint of the antennæ is much larger, the face shorter, th dorsum of thorax apparently without the pollinose stripes, the yello markings of the abdomen less extensive, and the hind coxal spur, s once distinguish this species from *T. quadrata;* from *T. mamillata* it i as readily separated by the absence of the basal femoral spur.

CRIORHINA.*

Criorhina Hoffmannsegge in litt.; subgenus, Meigen, Syst. Beschr., iii, 236 (1822); St. Fargeau and Serville, Encycl. Meth., x, 518 (1825); genus, Macquart, Hist. Nat. Dipt., i, 497 (1834).
Somula Macquart, Dipt. Exot. 2e Suppl., 57, 1847.
Eriophora Phillipi, Verh. Zool. Bot. Gesell., xv, 736, 1865.
Eurhinomallota Bigot, Annales Soc. Ent. France, 1882; Bull., No. 6.
Brachymyia Williston, Can. Ent., xiv, 77, 1882.

Medium to large sized species, black or greenish black, with or thout light ground markings. Head much flattened, broader than the orax. Antennæ situated upon a prominent conical frontal process, ird joint orbicular, or broader than long; arista bare. Face moderly produced below the eyes, downward or forward, in profile with a eater or less convexity in the middle. Eyes bare. Scutellum dark, translucent. Abdomen elliptical or very short oval. Legs strong, d femora not, or but little, thickened (*verbosa*), without projections bristles below, hind tibiæ sometimes compressed and bent. Marginal l of wings open, third vein nearly straight, cross-vein beyond the ddle of discal cell, oblique.

Sub-genus CRIORHINA. Face produced downwards, and forwards, proboscis more or less elongate. Eyes separated in the male. Large, ckly pilose species, the ground-color black, without light bands or ts.

Sub-genus CYNORHINA† (new). Face produced downwards, con- below, proboscis short. Eyes contiguous in the male. Moderately se species, the ground-color with yellow markings. Type *C. analis* eq. (also *Cr. fallax* Linné, Europe).

Sub-genus SOMULA. Face produced downwards, convex below, boscis short. Eyes well separated in the male. Moderately pilose cies, in large part yellow. See page 216.

The genus *Criorhina* is much confused. Meigen in 1822 (Syst. Beschr., 236) divided the genus Milesia into two sub-sections, A and B. Sec- A was designated as "Fein haarige," and included the modern esia, Spilomyia, and Temnostoma. Section B he gave as "Wollige. iorhina Hgg.)", including in the following order the species, *M. api-* Meig. (= *apiformis* Schrank), *berberina*, *oxacantha*, *flocosa*, *asilica*, *icauda*, and *ranuncula*. The first of these was figured as typical. cquart (Hist. Nat. Dipt., i, 497) in 1834 defined the genus, retaining species in the same order and adding several others, and also figur- the first as the typical species. Meanwhile St. Fargeau and Serville cycl. Meth., x, 518, 1825) had made *apiformis* Schrank, with which *ata* was afterward shown to be synonymous, the type of a new genus, the structure of the face (*Pocota*). The genus can only thus date m 1834, and be based upon Macquart's description rather than upon

*Κριός, a ram; and Ῥίς, nose. †Κυών, a dog; and Ῥίς, nose.

his most typical species. His definition of the genus is as follows: "Corps epais, velu. Face prolongée inférieurement, à légère proéminence. Front étroit, non linéaire ♂. Antennes insérées sur une saillie du front, première article un peu allongé, troisieme plus large que long. Jambes postérieures arquées et comprimées. Ailes écartées, première cellule postérieure à base oblique."

TABLE OF SPECIES.

CRIORHINA.

1.—Legs wholly black; abdomen thickly black pilose in the middle; tip of fourth vein bent inwards . . . . . nigripes

Legs in part red or yellow 2

2.—First joint of antennæ only a little elongate; tibiæ, except a small ring, and the tarsi, red . . . . . verbosa

First joint of antennæ considerably elongate; proboscis long; base of tibiæ yellow; tarsi in large part black . . . . . lupina

CYNORHINA.

1.—Face without yellow produced somewhat forwards below, second segment of abdomen broadly and third and fourth narrowly on the sides yellow, umbratilis

Face in large part yellow 2

2.—Face with a median shining black stripe; second segment of the abdomen on the sides, continued more narrowly on the third yellow . . . intersistens

Face yellow, without a median black stripe 3

3.—Abdomen wholly black . . . . . armillata, nigra

Abdomen with yellow 4

4.—Front of female wholly yellow; abdomen black, except a large part of the fourth and the whole of the fifth segments, which are bright orange yellow analis

Front of female black on upper part; abdomen with yellow spots or bands . . 5

5.—Abdomen with two to four pairs of yellow side spots, touching the lateral margins humeralis, notata

Abdomen with cross-bands, the first interrupted, the others entire . . scitula

Criorhina nigripes. (Plate X, figs. 1, 1*a*.)

Brachymyia (*Eriophora*) *nigripes* Williston, Can. Ent., xiv, 78, 1882.

Eurhinamallota nigripes Williston, Proc. Am. Phil. Soc., xx, 330, 1882.

Habitat.—California!

♀. Length, 13mm. Antennæ nearly black, first joint scarcely longer than the second, third joint broader than long, the front border only gently convex. Face in the middle gently convex, thickly covered on the sides with yellowish-white pollen, the median stripe and broad cheeks shining, the latter thinly yellowish pilose. Front moderately broad, shining black, with black pile, on the vertex with yellow pile. Proboscis not very long. Posterior orbits rather broad, yellowish dusted and with long, yellowish white pile. Thorax with abundant, rather long yellowish pile in front, black across the middle between the wing behind yellow, abundant and bushy on the post-alar callosities, qu long and thick on the scutellum. Pleuræ with dense yellow pile.

domen very short, broad, with abundant pile, shining black, the second segment opaque; an opaque, laterally abbreviated cross-band on the third segment; pile on the sides of the first and second segments and on the fourth and fifth, longer, yellow, elsewhere black. Legs wholly black, with long yellowish pile. Wings with a distinct blackish shade on outer part.

Five specimens (Morrison, Baron).

Criorhina lupina. (Plate IX, figs. 6, 6*a*, 6*b*.)

Brachymyia lupina Williston, Can. Ent., xiv, 77, 1882.
Eurhinamallota lupina Williston, Proc. Am. Phil. Soc., xx, 330, 1882.
? *Eurhinomallota metallica* Bigot, Bullet. bi-mens. Soc. Ent. Fran. (diagnosis only), 1882.

Habitat.—California!

♂, ♀. Length, 9 to 12^{mm}. Black, shining. Antennæ brownish-black, third joint at the base sometimes, second joint at the tip, and first joint at the base, reddish; first joint twice the length of the second, third broader than long. Face thickly clothed with yellowish white pollen and pile, a broad median stripe and the cheeks shining. Front in female broad, dusted on the sides, pile long and yellowish on the sides; much produced downwards and forwards, conical; in the male the frontal process very prominent and the eyes well separated by the swollen ocellar callosity. Posterior orbits thickly light gray pollinose and pilose. Thorax shining metallic black; clothed with moderately abundant and very long light-reddish yellow pile, on the pleuræ whitish. Abdomen shining black, with long, rather sparse, light-colored pile. Legs with long light-colored pile; black, the extreme tip of femora, basal third of tibiæ and basal joints of tarsi, yellowish or luteous, the tibiæ otherwise more of a brown color. Wings sub-hyaline, with a blackish shade on the outer part, the cross-veins in some specimens lightly clouded.

Four specimens. The proboscis in the female is as long as the thorax, somewhat shorter in the male.

Criorhina verbosa. (Plate X, fig. 2.)

Musca tomentosa Swederus, Vetensk., Ak. Nya. Handl., 1787.
Milesia verbosa (Harris) Walker, List, etc., iii, 568.
Brachypalpus verbosus Osten Sacken, Catalogue Dipt., 136, 1878.

Habitat.—Eastern States, Canada!

♀. Length, 16^{mm}. Large, black, shining, thickly pilose. Face thickly clothed on the side with yellowish-gray pollen, a median stripe from the base of the antennal process, and the cheeks, shining black. Front rather narrow, shining black, somewhat dusted on the sides, pile long, yellowish. Antennæ: first joint only a little elongate, nearly black; second joint red or brownish-red; third joint much broader than long, transversely oval, brownish-black, towards the base more or less reddish. Thorax a little shining above; densely pilose, in front and be-

hind yellow, across from the root of the wings black. Pile of pleu yellow. Scutellum black, with long yellow pile. Abdomen short, bro shining black, pile yellow, somewhat intermixed with black behin on the first, second, and part of the third segment the ground colo obscured by grayish dust and more abundant pile. Legs deep re femora, except the tip, black; a ring in the middle of the tibiæ deeper color, or black. Wings hyaline, a little clouded on outer part.

Three specimens, from Massachusetts (Mr. S. Henshaw), Maine.

CYNORHINA.

Cynorhina, sub. gen. nov., ante, p. 209.

Criorhina (Cynorhina) umbratilis, n. sp. (Plate IX, fig. 7.)

Habitat.—Connecticut!

♀. Length, 10mm. Face black, thickly dusted with white on the side a median stripe and the cheeks shining. Antennal process rather sma the face considerably excavated below, produced downward and som what forwards. Antennæ reddish-brown, third joint large, orbicula Front broader above than in the preceding species, mostly shining, wi rather long yellowish pile; occiput black, with yellowish pile and gr pollen. Thorax shining black, with rather abundant, obscurely yello pile, black across the middle, yellow on the scutellum and pleur Abdomen short, oval; black, shining, with short black pile; sides of se ond segment broadly, the third less so, the fourth narrowly orange y low; the ground color is, however, almost wholly obscured by thi woolly orange-yellow pile, extending less broadly on the sides of t third segment, and narrowly on the margin of the fourth; pile of se ond segment in the middle short, yellow. Legs black, with yellowis white pile; base of middle femora, basal two-thirds of hind femora, bas end of front and middle tibiæ, and all the tarsi, except the last two join and hind metatarsi, yellow. Wings somewhat brownish, lighter at t base, a darker cloud near the furcation of second and third veins.

One specimen, obtained from the blossoms of *Prunus virginianus*, June, Connecticut.

Criorhina (Cynorhina) intersistens.

? Xylota Badia Walker. List, etc., iii, 559.

Eristalis intersistens Walker, List, etc., iii, 615.

Genus novum, badia Osten Sacken, Cat. Dipt., 138; note 248, p. 253, 1878.

Habitat.—White Mountains, New Hampshire, Pennsylvania, Minn sota!, New Jersey (Walk.).

♂, ♀. Length, 9 to 11mm. Face yellowish white, thickly cover with silvery dust, in the middle a shining black stripe, reaching fro or near base of antennal process to oral margin; cheeks black, shinin antennæ black, third joint orbicular, brown. Front in female shinir black, with dust on the sides. Frontal triangle black, shining, with du near the orbits. Occiput black, with whitish pile and thickly cover

with grayish dust. Thorax greenish-black, shining, with rather long dusky pile, more abundant and whitish on the pleuræ. Abdomen deep shining greenish-black, with short erect black pile, on the sides and on the last segment longer, yellowish white; second segment on the sides with a large yellow triangle, reaching the whole length of the segment and continuous on the side of the third, narrowly in the male, more broadly in the female, clothed with abundant yellow pile. Legs chiefly yellow, with light yellowish pile; front femora, except the tip, middle, except base and end, and the hind pair, except a broad preapical ring, and last three joints of all the tarsi, black; front tibiæ with a moderate, middle with a narrow ring beyond the middle, hind tibiæ, except base and tip, and hind metatarsi, except the tip, brownish or brownish-black.

Two specimens (Nos. 1510, 1511), from near Glen House, White Mountains, New Hampshire (Dr. George Dimmock). A single male specimen from Minnesota (from Mr. E. Keen) differs in the third joint of the antennæ being more yellowish and the front femora at the very base, yellow.

I do not doubt that this is Walker's *Eristalis intersistens;* nothing is said of the black facial stripe in *X. badia.* "The synonymy is doubtful, as the description of the face does not quite agree; it is principally based on my recollection of the types at the British Museum."—O. Sacken, l. c.

Three specimens (♂, ♀), from Fairmount Park, Pennsylvania, May 23, from Mr. E. Keen.

Criorhina (Cynorhina) armillata.

Criorhina armillata Osten Sacken, Bull. Buff. Soc. N. Sci., iii, 68; Cat. Dipt., 27, 1878.

Habitat.—Quebec (O. S.)!

"♀. Length, 11 to 12^{mm}. Face and front above the antennæ honey-yellow; upper part of front and vertex blackish-bronze color, with fulvous pile; a black spot on the cheeks; antennæ yellow ferruginous, arista black; thoracic dorsum and scutellum greenish-bronze color, clothed with erect fulvous pile; pleuræ and pectus black. Abdomen black, shining, clothed with black pile; a [small] tuft of yellow pile on each side at the base. Halteres yellow. Coxæ and about two-thirds of the femora black; the end of the latter, the tibiæ, except a black ring in the middle of each, and the three basal joints of the tarsi are of a saturate yellow; the last two tarsal joints black. The proximal two-thirds of the wings are tinged with yellowish, the remainder is gray; the latter color extends along the posterior margin as far as the axillary incision; within the yellow portion there is a hyaline spot in the angle between the first and second veins (at the proximal end of the marginal cell); the veins near the root of the wings are all tinged with yellow.

"A single female specimen."—O. Sacken.

Description compared with the type specimen at Cambridge.

Criorhina (Cynorhina) nigra, n. sp.

Habitat.—New Hampshire!

♀. Length, 7mm. Lower part of the front, antennæ, and face, re yellow; front above, black; cheeks shining, black; dorsum of th black, shining, with a bronze reflection; pile short and not abun yellow. Abdomen wholly black, shining, nearly bare; pile on the in front rather abundant and long, light yellow. Legs black; k tip of tibiæ and of tarsal joints, luteous. Wings lightly infusc base yellow.

One specimen, White Mountains (National Museum, Professor R collection). This species is closely allied, evidently, with *C. armil* but will be readily distinguished by the black legs.

Criorhina (Cynorhina) analis. (Plate IX, fig. 3.)

Milesia analis Macquart, Dipt. Exot., ii, 2, 79; tab. 15, fig. 2.

Criorhina analis Osten Sacken, Cat. Dipt., 136; Williston, Proc. Am. Phi xx, 330.

Habitat.—Eastern States!

♂, ♀. Length, 9 to 12mm. Face light reddish yellow, the lightly dusted with white, nearly perpendicular below the prom antennal process, gently convex on the middle; cheeks black, or v blackish stripe. Antennæ of the same color as the face, the firs joints with short black pile above, third joint large, rounded. Fr female nearly of the same color, shining below, dusted and with yellowish pile above; on the vertex or upper third blackish; front angle shining, of the same color as face. Occiput black, dusted white near the orbits. Eyes of male contiguous for a short dist Thorax shining, greenish black, with moderately abundant light-co pile; humeri and pleuræ dusted with whitish and with more w pile. Abdomen bluish black, shining, with short black pile, on the of the second segment, longer, whitish; the black encroaches or less on the fourth segment, usually forming a more or less trian dilatation; remainder of the abdomen conspicuously orange-yellow the same colored pile. Legs chiefly black, with black and light y pile; tip of femora, the base and end of the front and middle tibia the narrow base and abrupt end of hind tibiæ, and all the tarsi, e the last two joints, light yellow; the front and middle tibiæ brownish in the middle. Wings hyaline, a little yellowish in fron

Numerous specimens.

Criorhina (Cynorhina) humeralis. (Plate IX, figs. 4, 4*a*.)

Criorhina humeralis Williston, Proc. Am. Phil. Soc., xx, 330.

Habitat.—Washington Territory, California!

♂, ♀. Length, 10 to 11mm. Face light yellow, with whitish du the sides, shining in the middle; cheeks blackish. Antennæ mor dish yellow, third joint orbicular. Frontal triangle, and the fro female on the lower part, colored like the face, upper half of front b pile yellowish, short. Thorax shining black, pile yellowish; h

and a spot on the upper part of meso pleuræ, opaque yellow. Margin of scutellum yellow. Abdomen black, second segment on the sides with a large triangular yellow spot; in the female the third and fourth segments on the sides in front with a rectangular spot, broadly separated, and the fifth segment yellow, except the black tip, which is prolonged narrowly to the front in the middle; in the single male specimen the yellow spots on the third segment are smaller, and the fourth and fifth segments are wholly black. Legs yellow, front and middle femora at the base, a ring before the tip of hind femora, and likewise of the hind tibiæ, brownish black; posterior metatarsi infuscate, last three joints of all the tarsi black. Wings hyaline, somewhat clouded on the outer part, the veins at the base and in front yellow.

Two specimens. An additional female in the M. C. Z. (Loew's collection) from California.

This may be the same species as the following:

Criorhina (Cynorhina) notata.

Milesia notata Wiedemann, Auss. Zw. Ins., ii, 109, 7; Macquart, Dipt. Exot., ii, 2, 80, 2; tab. xv, fig. 5.

Syrphus profusus Walker, List, etc., iii, 578.

Habitat.—Savannah (Wied.).

Ænea, abdomine nigro, maculis duabus, scutelli apice, geniculisque ferrugineis. Rückenschild erzfarben; Hinterleib schwarz, zwei Flecken, Spitze des Schildchens und Kniee rostgelb.—Lange 5½ Linien, ♂.

Antennæ blackish-brown, hind border of third joint ferruginous yellow. Face yellow, like half bleached wax, in some reflections nearly brassy-yellow shining; lowest part of front, on which the antennæ are situated, similar. Thorax yellowish metallic with yellow pile, base of scutellum blackish, tip yellow. Pleuræ blackish, with a broad yellowish metallic stripe covered with yellow pile. Abdomen black with yellowish pile; base of second and third segments on each side with a small ferruginous spot, on the second the inner end crescentric, on the third the spot is shorter, nearly quadrate. Wings nearly hyaline, the costa strongly yellowish, towards the end a little brownish, the basal veins, the stigma and the halteres yellowish. Legs pitchy-blackish brown, base and tip of the femora ferruginous yellow, tibiæ the same, in some reflections a little whitish; hind tibiæ in the middle broadly brown; anterior tarsi ferruginous yellow with brown tip, hind ones nearly wholly brown.—Translation from Wiedemann, l. c.

This species must be very similar to the preceding; it *may* be the same, but comparison is needed with Eastern specimens before suppressing *humeralis*. See *Criorhina pictipes*, Appendix.

Criorhina (Cynorhina) scitula.

Criorhina scitula Williston, Proc. Am. Phil. Soc., xx, 331.

Habitat.—Washington Territory!

♂, ♀. Length, 10 to 13mm. Face yellow, with whitish dust on the sides, considerably concave below the antennæ in the male, in the female less

so; produced downwards. Front in female black on upper part, with short blackish pile, below like the face; frontal triangle in male yellow, eyes rather more contiguous than in *analis*, the frontal process rather less projecting. Antennæ yellowish brown, or blackish brown, the second joint sometimes yellow with black above, the third joint always of a lighter color below. Thorax shining greenish-black; dorsum with blackish pile across the middle, in front and on the scutellum, yellow; humeri yellow with a small confluent spot below, meso-pleuræ yellowish gray pollinose and pilose. Scutellum black, the edge sometimes narrowly luteous. Abdomen black; second segment opaque, with two large yellow spots, narrowly separated, rounded on their inner ends and narrowed toward the margin; third segment with a yellow cross-band on the anterior part, doubly convex behind (the greatest convexity being toward the middle), with a sharp, median angular incision behind, and attenuated nearly to a point on the sides of the abdomen; fourth segment similar in female, in male wholly black, or with a triangular spot in front and reddish behind; hypopygium reddish or yellow; fifth segment in female yellow in front; black at tip. Front coxæ white pollinose in front; all the femora black, except the tip; front and middle tibiæ and metatarsi yellow or reddish yellow; hind tibiæ yellow at the base and tip, a broad ring in their middle, and the hind tarsi, blackish brown. Wings yellowish hyaline.

Four specimens.

SOMULA.*

Criorhina (Somula) decora. (Plate X, figs. 3, 3*a*, 3*b*.)

Somula decora Macquart, Dipt. Exot., 2° Suppl., 57, 1; tab. ii, fig. 11; Osten Sacken, Cat. Dipt., 138.

Habitat.—Eastern and Middle States!

♂, ♀. Length, 14 to 16^{mm}. Antennal process conical, very prominent. Antennæ brownish-black. Face below the antennal process very slightly concave, descending perpendicularly considerably below the eyes; gently convex, light yellow, shining, except near the eyes a small spot is whitish dusted. Cheeks shining black. Front in the female black on the upper part; below in both sexes the upper part of the antennal process is black, the yellow of the face extends up on each side, cutting off the black of the upper portion from that below; pile of the front and the upper part of the occiput black, on the narrow orbits below light yellow. Thorax deeply shining metallic greenish-black, with short, sparse, and obscurely yellowish and black pile; humeri opaque yellow, with yellow pile, meso-pleuræ with a large oval yellow spot and abundant yellow pile. Scutellum like the thorax. Tegulæ yellow. Abdomen black, with three or four pairs of conspicuous, oblique, large, oval, bright yellow, opaque spots; the first pair on the second segment,

* For the definition of this genus see page 209.

broader towards the middle, concave in front and directed backwards and outwards, but not reaching the sides, the sides of the segment narrowly yellow, with yellow pile, the black opaque, except a posterior metallic cross-band, broadest in the middle; third segment similar, except that the spots are less narrowed outward, and the anterior margin is narrowly shining; fourth segment like the third, except that the yellow spots are broader, shorter, and more oval, the metallic of the front border narrower and confined mostly to the sides; fifth segment in the female with the spots small and nearly rounded. The posterior segments margined with yellow behind and clothed with yellow pile, most abundant on the last segment. Venter black, shining, with narrow yellow hind margins to the segments. Legs light yellow, the immediate base of all the femora (on the hind pair the inner side for nearly a third of their length) and the last three joints of all the tarsi black; the fore and hind tarsi on their first two joints and the tip of the hind tibiæ red. Wings dark brown in front, lighter beyond the cross-vein the posterior part hyaline.

Twelve specimens, Connecticut, Massachusetts, and Pennsylvania.

CRIOPRORA.*

Crioprora Osten Sacken, Cat. Dipt., 251, note 241, 1878.

Large, black species, thickly or long pilose. Head not broader than the thorax. Eyes bare, sub-contiguous. Antennæ situated below the middle of the head in profile, the first two joints a little elongated, the third obliquely oval; arista bare. Face laterally compressed, forming a rounded ridge in the middle, on the upper part sometimes sharply ridged, produced nearly forwards, more or less snout like, gently concave from antennæ to tip, the end notched. Cheeks not broad, the lower border nearly at right angles to the plane of the occiput. Thorax rather short and broad. Abdomen oval. Legs stout, the hind femora more or less thickened, with spines below; in the male the hind coxæ sometimes tuberculate and the femora and the tibiæ bent. Marginal cell of wings open; third longitudinal vein nearly straight; cross-vein beyond the middle of the discal cell and oblique. Type of genus *C. alopex* O. S., North America.

TABLE OF SPECIES.

1.—Dorsum of thorax clothed with thick yellow, or reddish-yellow pile, on the pleuræ black; wings with brownish clouds along the veins 2

Dorsum of thorax clothed with long, grayish or yellowish-gray pile, on the pleuræ yellowish-white; abdomen deep bluish-metallic . . { cyanogaster / cyanella

2.—Front in female broad, with yellow pile; hind femora somewhat incrassate, **alopex**

Front in female clothed with black pile; hind femora thickened, in male much more so and curved . . . . . **femorata**

* *Κριός*, a ram; *πρῶρα*, front.

Crioprora cyanogaster.

Brachypalpus cyanogaster Loew, Centur., x, 51.
Crioprora cyanogaster Osten Sacken, Cat. Dipt., 136, note 241, p. 251.

Habitat.—Pennsylvania (Loew), Colorado!

♀. Length, 11mm. Black, white pilose. Abdomen violac Black, shining, white pilose. Head of the same color. Antennæ cous black, first two joints rather long, third oblique. Dorsu thorax and scutellum bronze-black. Abdomen rather broad and lightly violaceous, white pilose, the third segment, except the la margins and the fourth segment, except some white pile on the clothed with shorter black pile. Legs wholly black, white pilose; femora stout, but not incrassate, near the tip below sub-excised, provided with rigid black setulæ. Head of the halteres dilutely ye ish, stem fuscous; tegulæ white. Wings cinereous, hyaline, near tip more saturate cinereous. Tip of costal cell and stigma wholl lutely infuscate. Veins fuscous-black, the transversal ones slen clouded with fuscous.—Translation from original.

♂. Length, 12mm. Head in profile like that of *C. femorata.* narrowly separated below the ocelli; frontal triangle light yello gray pollinose, except a median shining stripe, the ground-color on side below luteous. Antennæ yellowish-brown. Dorsum of thora scutellum rather thickly clothed with light yellowish gray pile; o pleuræ of the same color. Abdomen elongate, not broader tha thorax, shining. First segment and base of second bronzy; rema violaceous. Third and fourth segments wholly black pilose. No op black cross-bands. Tarsi dark reddish brown; pile of femora in part black; hind femora incrassate and arcuate; hind tibiæ di and with an obtuse angle on the inner side above.

One specimen, Colorado (Morrison), altitude 8,000 feet. Ther some discrepancies from the original description, but I would not sider them more than individual or varietal without compariso Eastern specimens in both sexes. My male differs very distinctly that of *C. cyanella*, in the less produced epistoma, more thickened arcuate hind femora, and, perhaps, also, in the more slender abdo The absence of the opaque bands of the abdomen in the male, w once distinguish them. My female of *C. cyanella* has an opaque l and as Osten Sacken did not indicate its presence in the female i original description, drawn from both sexes, I am at a loss wheth consider it a sexual or individual character.

Crioprora cyanella. (Plate X, fig. 6.)

Pocota cyanella Osten Sacken, West. Dipt., 339.
Crioprora cyanella Osten Sacken, Cat. Dipt., 136, note 241, p. 251.

Habitat.—California!

♂, ♀. Length, 8 to 10mm. Face black, shining, much produced s like, very conical at tip; on each side of this snout a broad stri grayish pollen somewhat conceals the black ground color. Front

vertex black, but little shining in the female and thickly clothed with yellowish-white pile, some of which descends along the side of the face, below the antennæ; the occiput and the posterior and inferior orbits beset with pile of the same color. Antennæ brown, first joint sometimes paler; arista reddish. Thorax metallic greenish-black, rather thickly clothed with long pile, which does not, however, much obscure the ground color; the pile on the dorsum is obscurely yellowish or dull grayish, more yellowish-white on the pleuræ. Halteres brownish. Abdomen dark or cobalt, blue, beset, especially on the sides with long whitish pile, in the middle more or less short and black; in the male the second segment is opaque black, except a triangle on each side and a narrow hind margin, which are shining; the third segment has an arcuated, somewhat narrow, opaque black cross-band, sometimes interrupted in the middle. Legs black; tibiæ sometimes brown; knees of the first two pairs yellowish-brown; legs beset with whitish pile, longer on the femora; hind femora somewhat thickened; hind tibiæ rather stout and somewhat curved, especially on the distal part. Wings subhyaline, grayish.

Two males and one female (O. T. Baron), California. This description is but little amended from the original, also drawn from three specimens. My female, which may be somewhat teneral, has the legs also more reddish, the second segment opaque in front, dilated in the middle behind to a point, the hind femora are a little less thickened, and the hind tibiæ a little less bent. Baron Osten Sacken's specimens were reared from pupæ found in February under the bark of *Quercus agrifolia*.

Crioprora femorata. (Plate X, figs. 5, 5*a*.)

Crioprora femorata Williston, Proc. Am. Phil. Soc., xx, 329.

Habitat.—Oregon, Washington Territory!

♂, ♀. Length, 15 to 16^{mm}. Deep shining black. Front in female somewhat narrowed above, with black pile, a little less shining and coppery-colored above in the male, at least a spot of whitish dust above the antennæ on the side. Eyes in male narrowly separated below the ocelli. Face everywhere shining, bare, only moderately produced and obtuse below. Antennæ reddish-brown; arista yellow. Dorsum of thorax and scutellum shining metallic black, with abundant, moderately long, yellow pile; pleuræ with black pile. Abdomen somewhat elongate in the male, oval in the female, with a brassy reflection, much shining; first segment, except the sides, and the second in front and middle subopaque; pile short, not very abundant, black, longer near the sides; on the sides of the second segment longer and yellow. Knees slightly reddish, pile of legs black, short and sparse on the tibiæ; the front and hind tarsi with golden pubescence; hind femora in the male much thickened and bent, with a row of short spinous tubercles below; hind coxæ obtusely tuberculate below, and the hind tibiæ abruptly angulated; in the female the hind femora and tibiæ not bent, the former swollen, but the tubercles less distinct; the coxæ not at all tuberculate;

in both sexes the femora with a triangular projection below near the tip and a corresponding one on the tibiæ near the base. Wings hyaline, with brownish clouds along the veins, and a dark spot near the tip of the auxiliary vein.

Two specimens (H. K. Morrison). This species must be allied to *Brachypalpus chrysitis* of Europe, and forms a connection with that genus.

Crioprora alopex.

Pocota alopex Osten Sacken, West. Dipt., 338.
Crioprora alopex Osten Sacken, Cat. Dipt., 251, note 241.

Habitat.—California (O. S.).

"♂. Length 10 to 11^{mm}. Antennæ brown, first joint black, arista rufous; head black, shining; front rather broad, beset with yellow pile. Thoracic dorsum beset with dense yellowish rufous pile, which nearly conceals the shining black, sub-metallic ground color; pleuræ black, with black pile; scutellum black, with a purplish reflection and long black pile along the edge; halteres brownish. Abdomen black, shining, beset with black pile and some scattered pale yellow pile toward the tip. Legs black, knees and base of tibiæ of the two anterior pairs pale brownish; hind femora somewhat incrassate and beset with a tuft of yellow hairs above; hind tibiæ rather stout. Wings tinged with reddish-brown anteriorly, especially along the veins, the inside of the cells being paler; posterior portion sub-hyaline, slightly brownish along the veins."—Osten Sacken, l. c.

POCOTA.*

Pocota St., Fargeau and Serville, Encycl. Meth., x, 518, 1825.
Dasymyia Egger, Verh. Z. B. Ges., xiv, 71.
Hadromyia Williston, Can. Ent., xiv, 78.

Large species, thickly pilose; black or metallic black, abdomen without spots or bands. Head somewhat flattened. Eyes bare. Antennæ situated near the middle of the head in profile, short, the third joint obliquely oval. Face short, the oral margin in front not lower than the lower border of the eye, gently or deeply concave from the antennæ to the tip, the tip standing forward as far as the base of the antennæ, obliquely truncate below; the cheeks rather narrow, gently convex below, and nearly at right angles to the occiput. Thorax and scutellum large and broad. Abdomen short, broader than the thorax. Legs stout, the hind femora only slightly thickened, thickly beset on the under side with short bristly hairs. Marginal cell of wing open; third vein nearly straight, anterior cross-vein oblique, beyond middle of discal cell. Type of genus *P. apiformis* (Schrank) Schin.

Our single known species must be nearly allied to *P. apiformis*. The face is apparently a little more deeply concave in profile and the insect is larger.

* *Πόκος*, sheep wool.

ocota grandis (Plate, X, figs. 7, 7*a*.)

Hadromyia grandis Williston, Can. Ent., xiv, 79.
Brachypalpus Morrisoni Bigot, Annales Soc. Ent. for 1883, 355.

Habitat.—Washington Territory!

♂. Length, 22 to 23mm, of wings 17mm. Brassy-black, shining. Front lack, densely clothed with yellowish-gray pollen, and with short yel- w pile, intermixed with black at the vertex. Antennæ brownish-red, lackish toward the base. Face whitish-yellow, thickly covered with hitish pollen; in the middle below the antennæ the ground color is bscurely blackish; cheeks black, shining. Dorsum of thorax in front f the wings, and the pleuræ, densely clothed with short yellow pile. osterior half of thorax, the scutellum and the first three segments of bdomen with thick, short, black pile; fourth and fifth segments with nger yellow pile. Legs black, with short black pile; knees slightly eddish; front tibiæ in front, the tip of hind tibiæ, and the front and ind tarsi yellowish-red, with short, thick, golden pile; middle tarsi eddish. Wings hyaline, costal and sub-costal cells yellowish.

One specimen.

BRACHYPALPUS.*

Brachypalpus Macquart, Hist. Nat. Dipt., i, 523, 1834.

Dark colored species, the body wholly without yellow markings, oderately or thickly pilose. Head and wings as in *Pocota*, but the ab- omen narrower than the thorax, elongate; hind femora somewhat, sually much, thickened and elongate. Type of genus, *B. varus* Panzer, Europe.

TABLE OF SPECIES.

1—Hind femora with short bristles below; abdomen with brilliant metallic cross-bands (*Calliprobola*). 4
Hind femora not with bristles below; abdomen uniformly black. 2
2—Legs wholly black. . . . . **Rileyi**
Legs in part yellow. 3
3—Second and third abdominal segments each with a broad, posterior, opaque cross-band; smaller species. . . . . **parvus**
Abdomen not with such cross-bands; larger species. . . . . **frontosus**
4—Dorsum of thorax yellow pilose. . . . . **sorosis**
Dorsum chiefly black pilose. . . . . **pulcher**

Brachypalpus frontosus. (Plate X, fig. 8.)

Brachypalpus frontosus Loew, Centur., x, 50.

Habitat.—District of Columbia, Pennsylvania!

♂, ♀. Length, 10 to 12mm. Black, shining, clothed with whitish, or obscurely yellowish-white pile. Eyes of male very briefly contiguous, frontal triangle covered with yellowish-whitish pollen; front in the female broad, with a median white pollinose fascia; obsolete in the middle. Antennæ reddish brown or blackish; first two joints a little elongate,

βραχύς, short; palpus.

sometimes dark red, third joint obliquely oval; arista yellowish-brownish. Face retreating to nearly as low as the bottom of the eyes, the epistoma produced, in profile deeply concave; broadly shining across the middle, above, for the whole width, and for a short distance below the antennæ, whitish pollinose; below, an oblique stripe runs from the eye to the oral margin in front. Dorsum of thorax and scutellum metallic black, shining, obscured by the pile, the former with four sub-obsolete coppery-purple stripes. Abdomen black, or brownish black, sub-opaque in the male on the posterior part of the second and third segments; pile wholly light colored. Legs black, extreme tip of femora, and narrow base of tibiæ, reddish yellow, the intermediate tibiæ more reddish throughout, except a dark ring; front and middle tarsi reddish on the basal joints; hind femora thickened, much so in the male, and on the outer part below with an angular projection; posterior tibiæ arcuated, more so in the male, and with a tooth-like process on the inner side above, corresponding to the femoral projection, and a stout spur at the lower end, both of which are wanting in the female. Halteres and tegulæ light yellow. Wings nearly hyaline, near the end somewhat infuscated; transverse veins lightly clouded; stigma luteous.

Two male specimens from Pennsylvania (Eugene Keen), and a teneral female bred by Professor Riley.

Brachypalpus Rileyi, n. sp.

Habitat.—North Carolina!

♀. Length, 7^{mm}. Black. Antennæ blackish-brown, third joint transversely oval; arista yellow. Face and posterior orbits gray pollinose; cheeks shining black. Lower part of the front shining; across the middle broadly pollinose; black pilose above. Dorsum of thorax black, sparsely pilose, in the middle with two narrow opaque stripes; on each side a similar, abbreviated, and interrupted one. Abdomen oval, bright shining black, sparsely light pilose; the first segment, the second segment, except a large triangular shining spot on each side, narrowly separated at their tips, and a posterior band on the third segment, opaque black. Legs wholly black, with sparse light pile; hind femora thickened. Wings hyaline, stigma luteous, a narrow brown cloud on base of second vein, anterior cross-vein, and the penultimate section of fifth vein.

One specimen, North Carolina (National Museum, Professor Riley's collection).

Brachypalpus parvus, n. sp.

Habitat.—Colorado!

♂. Length, 7^{mm}. Head as in *B. Rileyi;* the eyes narrowly separated below the ocelli. Dorsum of thorax brassy black, shining, with two narrow opaque stripes, abbreviated behind, and an outer abbreviated stripe on each side, interrupted at the suture. Pile only moderately abundant, light yellow. Abdomen shining metallic bronze black; the

second and third segments each with a broad posterior opaque black band, with a slender median anterior extension to the front margin. Pile light yellow, long on the sides. Legs black; knees and basal joints of the tarsi yellow; hind femora much thickened, not arcuate; hind tibiæ arcuate, considerably shorter than the femora. Wings nearly hyaline, with brownish clouds on the middle cross-veins.

One specimen, Colorado (National Museum, Professor Riley's collection).

It is very possible that this is the male of *B. Rileyi*, but the metallic coloring of the body and the color of the legs make it doubtful.

Brachypalpus sorosis, n. sp.

Habitat.—Georgia!

♂. Length, 12mm. Frontal triangle and face yellow. Antennæ yellowish red. Cheeks black. Dorsum of thorax shining metallic bronze, with erect, rather abundant light yellow pile. Humeri yellowish red. Pleuræ black, in the middle with light yellow pile. Scutellum like dorsum of thorax. Abdomen on the dorsum shining metallic bronze, with opaque black cross-bands; first segment black in front, the second segment with a broad band in front, and another, a crescentric one (the broadest) behind; third segment with a slender one on the anterior margin, behind the middle with a narrow anteriorly arcuate one; pile erect, rather abundant, light yellow. Legs, including the trochanters, reddish yellow, with nearly white pile; tip of tarsi blackish. Wings brown in front, subhyaline behind.

One specimen in National Museum (Professor Riley's collection), labelled "S. Georgia, Morrison." The species very strongly resembles *C. pulcher*, but it seems distinct in the pile of the thorax, and the color of the legs and wings.

Brachypalpus pulcher. (Plate X, figs. 9, 9*a*.)

Brachypalpus pulcher Williston, Can. Ent., xiv, 79.

Calliprobola area Bigot, Annales Soc. Ent. de France, 1883, p. 352.

Habitat.—Oregon, Washington Territory!

♂, ♀. Length, 12 to 16mm. Face yellow, with black cheeks, and with or without blackish or brown median stripe, shining in the middle, pollinose on the sides. Frontal triangle of the male yellow or brownish; front in female black, rather narrow, a little broader below, yellowish pollinose on the sides; piles short, fuscous. Antennæ yellowish brown or blackish, third joint of a lighter color near the base below. Dorsum of thorax and scutellum black, with a bluish or partly metallic reflection, or, in better preserved specimens, a metallic bronze; humeri and a slender interrupted band on the suture yellowish-whitish pollinose; the pile of the dorsum more blackish, on post-alar callosities, scutellum and pleuræ, yellow. Abdomen of a brilliant golden or bluish-bronze, with short golden pile and opaque black markings as follows: first segment, except the sides, in the female, in the male the hind border also shining;

second segment on the front part, and a band beyond the middle of about the same width, somewhat angulated in front in the middle; third segment similar, except the front border may be quite narrow and the cross-band sub-interrupted; fourth segment in male wholly metallic, concealing the hypopygium, in the female with a very narrow front border and narrow interrupted cross-band; the black bands are attenuated on the sides, not quite reaching the lateral margins. Legs yellow femora rather stout, the hind pair moderately thickened; front and middle pairs mostly brownish or black, sometimes prevailing yellow, blackish above, hind femora varying from a blackish ring near the base to almost wholly black, below with short black bristly hairs near the end last three joints of the tarsi black. Wings smoky hyaline, stigma yellowish brown.

Twelve specimens, Mount Hood, Oregon, and Washington Territory (H. K. Morrison, Professor Comstock).

XYLOTA.*

Xylota Meigen, Syst. Beschr. iii, 211, 1822.
Heliophilus Meigen, Illiger's Mag., ii, 273, 1803.
Micraptoma Westwood, Introduction to Class. of Insects, i.

Medium to large sized species, slender, the abdomen more or less red, yellow, or metallic. Head hemispherical. Antennæ situated on a more or less prominent conical projection, first two joints short, the third rather large, oval or round, with a basal, bare arista. Face in profile concave, without tubercle, transversely arched or rarely carinate, oral margin in front projecting, but not extending as far forward as the base of the antennæ. Eyes bare, contiguous in the male; front in female narrowed above. Thorax large; scutellum thinned on its border, of the color of the thoracic dorsum. Abdomen not wider than the thorax, twice or thrice as long, somewhat flattened and usually with nearly parallel sides. Legs stout; the hind femora elongated and more or less thickened, below with a row of short spines, not arcuated; hind coxæ in the male frequently with a spinous tubercle below; hind tibiæ arcuate, often terminating in a spur. Wings when at rest usually folded over each other; marginal cell open, third vein straight or gently curved, anterior cross vein at or beyond the middle of the discal cell, more or less oblique.

TABLE OF SPECIES.

1.—Legs wholly black; hind femora much thickened 2
Legs not wholly black 3
2.—Wholly black; wings black . . . . . chalybeus
Abdomen chiefly red; the second segment with a basal black triangle; wings nearly hyaline . . . . . piger

*Ξύλον, wood.

3.–Second and third abdominal segments (at least) red 4
Second and third segments wholly black, or with yellow spots 7
4.–Abdomen wholly red except the first segment; hind coxæ of the male without a tooth below . . . . . bicolor
Abdomen except the first segment, not wholly red 5
5.–Second abdominal segment with a basal black triangle; the 2-4 segments with narrow lateral black margins . . . . . marginalis
Abdomen not so marked 6
6.–Hind coxæ of male with a spur below . . . . . flavitibia
Hind coxæ of male without a spur below . . . . . notha
7.–Front and middle legs and a large part of the hind femora yellow; large species 8
Front legs in large part black 9
8.–Coxæ black . . . . . curvipes
Coxæ yellow . . . . . vecors
9.–Abdomen long, slender, with two yellow spots on the second segment . . . . angustiventris
Abdomen not unusually slender 10
10.–Abdomen with two pairs of yellow spots 12
Abdomen wholly black 11
11.–Third joint of antennæ but little longer than broad . . Anthreas, obscura
Third joint large, much longer than broad . . . . . elongata
12.–Hind femora much thickened, smaller species 13
Hind femora moderately thickened 14
13.–Arista wholly black . . . . . nemorum
Arista yellow at the base . . . . . fraudulosa
14.–Fourth abdominal segment brilliant bronze; third longitudinal vein gently curved . . . . . analis
Fourth abdominal segment black; third vein quite straight . . . ejuncida

For other species, see descriptions.

Xylota (?) tuberans, n. sp.

Habitat.—Texas!

♂. Length, 9 to 10mm. Shining black. Face thickly gray pollinose, except on the tubercle; occiput and posterior orbits densely pollinose. Third joint of antennæ not large, orbicular; thorax shining, thinly and short yellowish and black pilose. Abdomen wholly shining black, nearly bare. Legs black, all the tarsi, except the last two joints, yellowish white. Hind femora thickened and elongate, not arcuate. Coxæ without spurs. Wings nearly hyaline toward the base, infuscated on outer part. Stigma luteous.

One specimen, Texas, National Museum.

The present species cannot properly be placed in this genus. The neuration is the same, except that the cross-vein is not at all oblique. The head in general structure is the same, but the face is very distinctly tuberculate. In profile it is strongly concave below the antennæ, then forms a small but prominent tubercle opposite the lower border of the eyes, and the face is more produced than in Xylota. The cheeks are broader and form an obtuse angle with the plane of the occiput. The abdomen is elongate, but is much stouter and broader than in most

Xylotæ. It is as broad as the thorax, the second and third segments nearly parallel on the sides.

I suspect that the female abdomen may be broader, and the face without a tubercle; if so there is evidently a relationship with *Myiolepta*.

Xylota marginalis, n. sp.

? *Xylota Libo* Walker, List, etc., iii, 556.

Habitat.—White Mountains!

♀. Length, 10mm. Front broad, only gently narrowed above, shining black, pollinose on each side, broadly nearly the middle; pile white, somewhat dusky near the vertex. Antennæ yellowish red, the arista wholly yellow; the first joint black, third joint rounded, a little longer than broad. Face shining black, lightly whitish dusted on each side below the antennæ. Dorsum of thorax shining bronze black, with very short, obscure whitish pile; in the middle with two slender darker stripes separated by a linear space. Pleuræ shining black; tegulæ white; halteres very light yellow. Abdomen bright red; first segment, except the hind angles, a slender triangle at the base of the second, extending to beyond the middle, and the narrow lateral margins of the second, third, fourth, and fifth segments, deep shining black; the short pile wholly white. All the femora except their immediate tip, and the broad distal end of the hind tibiæ, black; front and middle tibiæ yellow, with the distal ends brown, and a less distinct brownish ring before the middle; hind tibiæ, except the distal part, red, with a brown ring on basal third; first three joints of all the tarsi light yellow, the terminal joints blackish; hind femora much thickened, hind coxæ without spurs, hind tibiæ with a terminal spur. Wings nearly hyaline, distinctly tinged with yellowish along the veins, stigma opaque yellow; the base of the marginal cell, the anterior cross-vein, and the cross-veins at base of discal and fourth posterior cells, conspicuously clouded with brown.

One specimen, near Mount Washington, August 1. This agrees tolerably well with Walker's description of *X. libo*, except that the antennæ are not "black with the first joint ferruginous" and his description of the abdomen will not apply, viz, "dark red, slightly pitchy on the sides and hind borders of the segments."

Xylota analis, n. sp.

Habitat.—California, New Mexico!

♂, ♀. Length, 11 to 12mm. Front of female considerably narrowed above, shining black, toward the vertex metallic, across the middle broadly yellowish gray pollinose and similarly pilose. Antennæ black, the third joint brown, with more or less reddish, rounded, not longer than broad, arista wholly luteous. Face black, moderately thickly white pollinose below the antennæ; frontal triangle thickly white pollinose except a lunate spot above the antennæ. Dorsum of thorax bronze black, more metallic in front, a sericeous spot to the inner side of each humerus; pile very short, in front yellow, across the middle

blackish. Abdomen: first segment bronze black, shining; fourth segment and the following very brilliant golden bronze; second segment opaque black, on each side with a large triangle shining yellow, its outer border bronze; third segment similar, but the black not as extensive on the front margin and the yellow not filling out the whole of the triangle, which is elsewhere shining bronze like the fourth segment; pile yellow, except on the opaque black portions, where it is black. Legs black; the immediate tip of all the femora, the base of all the tibiæ, and the rather broad tip of the front and middle tibiæ, the narrow tip of the hind tibiæ, and the first two joints of all the tarsi, reddish yellow; hind femora moderately thickened, hind coxæ with a slender sharp spur in the male, hind tibiæ without a spur at the tip; pile of legs white. Wings nearly hyaline, stigma brownish; third longitudinal vein beyond the cross-vein gently but distinctly curved backward.

One male, California (Baron), and two females, New Mexico (Gaumer).

Xylota pigra. (Plate XI, figs. 7, 7*a*.)

Syrphus piger Fabricius, Syst. Entom., iv, 295, 63, 1794.
Milesia pigra Fabricius, Syst. Antl., 192, 16; Fallen, Syrph., ii, 7 var. B; Latreille, Gen. Crust., iv, 331.
Xylota pigra Meigen, Syst. Beschr., iii, 221, 14; Zetterstedt, Dipt. Scand., ii, 878, 12; viii, 3192; Loew, Amer. Jour. Sci., xxxvii, 317.
Milesia hæmatodes Fabricius, Syst. Antl., 193, 21.
Xylota hæmatodes Say, Amer. Ent., i, pl. viii; Compl. Wr., i, 16; Wiedemann, Auss. Zw. Ins., ii, 99, 3; Macquart, Dipt. Exot.,ii, 2, 73; pl. xiii, fig. 4.
Xylota crassipes Wahlberg, Acta Holm., 1838, 15, 7.
? *Xylota rubbiginigaster* Bigot, Ann. Soc. Ent. Fr., 1884, 543 (Teneral?).

Habitat.—Atlantic and Pacific States, Europe!

♂, ♀. Length, 11 to 12mm. Antennal process prominent, below the antennæ receding to beyond the middle, then directed downward and forward. Face black, thinly clothed with whitish pollen, shining on the cheeks. On the frontal triangle, except just above the antennæ, pollinose. Front in female shining, a narrow, lightly pollinose band across the middle. Antennæ black, third joint brownish black. Thorax black, but little shining, finely roughened, with a purplish or bronze reflection, nearly bare, the pile very short, black, more or less white in front; on the inner side of the humeri a large pollinose spot. Abdomen dark shining red, in the male usually more orange-colored, on the posterior segments frequently brownish or brown, the hypopygium piceous; first segment, except the small hind angles, shining black; the second with a black triangle in front, its tip reaching to or beyond the middle of the segment. Legs black, sometimes more brownish; tarsi and knees a little lighter colored; hind femora much thickened, in the male a little more so than in the female, and with short spinous bristles the whole length below, longer on outer part; hind coxæ of the male rounded below, without spur or protuberance; hind tibiæ in both sexes with a spur at tip. Wings nearly hyaline behind, in front and outer part more or less blackish or brownish; stigma darker.

Two specimens from Connecticut, one from Georgia, and twenty-five from California, Washington Territory, Oregon, and Colorado. A single specimen from Professor Riley's collection labeled "Hundreds found under pine bark in damp situation," which agrees with observations made by Perris (Hist. des Insects du Pin maritime, Ann. Soc. Ent. France, 4, x, 326–330, pl. 4, figs. 112–124) on European specimens.

Xylota flavitibia. (Plate XI, fig. 6.)

Xylota, sp. nov., Williston, Proc. Am. Phil. Soc., xx, 1882, 327.
Xylota flavitibia Bigot, Annales Soc. Ent. Fr., 1884, 546.

Habitat.—Colorado!

♂. Length, 12mm. Face short, moderately receding and concave, black, rather thickly covered with white pollen. Antennal process rather prominent. Antennæ black, the third joint brownish or reddish black. Frontal triangle wholly thickly white pollinose. Cheeks narrow, convex below. Thorax metallic black, shining, a sericeous spot on the inner side of each humerus, thickly clothed with short whitish pile. Abdomen dark shining red, brownish or blackish towards the end; first segment, except the small hind angles, and hypopygium shining greenish-black; second segment wholly red. Legs black; all the tarsi, except the last two joints, reddish yellow; tibiæ reddish yellow, the front and middle pairs with a broad brownish, the hind pair with a broad blackish ring, beyond the middle. Hind femora considerably thickened, but less so than in *X. pigra;* the hind coxæ of male with a slender sharp spur below. Wings nearly hyaline, but distinctly tinged with brownish on the outer part; stigma brown.

♀. The lower part of the front is pollinose, the second, third, and fourth segments of the abdomen wholly red; otherwise as in the male.

Two ♂ and two ♀ specimens.

Xylota notha, n. sp.

Habitat.—Colorado!

♂. Length, 11mm. Face and frontal triangle covered with gray pollen, the ground color wholly black. Antennæ, with the arista, black. Dorsum of thorax shining metallic bronze green black, a sericeous spot on the inner side of each humerus; pile very short, light colored, on the pleuræ longer and white. Scutellum like the thoracic dorsum. First segment of abdomen shining greenish black, fourth and hypopygium deep shining greenish black; second and third segments light red with a very faint, slightly brownish median stripe; second segment with a narrow black cross-band in front, dilated in the middle into a small triangle not reaching to the middle of the segment, opaque black; the hind border of the second segment narrowly and faintly brownish, the angles behind blackish; hind border of the third more distinctly brown, the posterior angles more broadly brownish. Legs black; base of all the til[illegible] f the front and middle pairs, and first three joints of the [illegible]e tarsi, light yellow; hind tarsi at the base, and the

tibiæ in the middle, more brownish; hind femora moderately thickened, hind coxæ without tubercle below. Wings nearly hyaline, stigma brown.

One specimen.

Xylota bicolor.

Xylota bicolor Loew, Centur., v, 39.

Habitat.—Pennsylvania!

♂. Length, 13mm. Face and front black, thickly grayish yellowish dusted, except on the cheeks, which are bare and shining. Antennæ black, third joint large, somewhat reddish below near the base. Dorsum of thorax shining bronze black, clothed with light yellow, rather long pile; pleuræ shining black, with whitish pile. Abdomen: first segment shining black with whitish pile, its posterior angles narrowly and the remainder of the abdomen, including the hypopygium, bright orange red with golden pile. Legs black, white pilose; the base of front and middle tibiæ and the first two joints of the front and middle tarsi light yellow or white; hind coxæ rounded, not tuberculate, hind femora considerably thickened, wings hyaline; stigma luteous.

Two specimens, from Mr. Eugene Keen.

Xylota ejuncida. (Plate XI, figs. 8, 8*a*.)

Xylota ejuncida Say, Amer. Ent., i, pl. viii; Compl. Wr., i, 15; Wiedemann, Auss. Zw. Ins., ii, 100, 5.

Xylota Eaton Walker, List, etc., iii, 754.

? *Xylota quadrimaculata* Loew, Centur., vi, 56.

Xylota annulifera Bigot, Annales Soc. Ent. Fr., 1884, 545.

Habitat.—Over the whole United States.

♂, ♀. Length, 9 to 10mm. Face much receding to considerably below the middle; black, rather thickly clothed with gray pollen. First two joints of antennæ black, third red or brownish red, oval, longer than broad, the arista wholly black. Frontal triangle thickly covered with grayish-yellowish pollen; front of female narrow above, bright shining black, except a narrow pollinose cross-band below the middle. Dorsum of thorax shining metallic green or greenish black, a sericeous spot at the inner side of each humerus; pile of scutellum short, yellow; on the mesopleuræ longer, white. Abdomen: first, fourth, and following segments shining greenish black; second and third opaque black, with a broad, yellow, shining, short yellowish pilose, interrupted cross-band; elsewhere the pile of the abdomen is short and black, except a white spot on each side of the fourth segment; in the male the yellow spots are somewhat smaller, and sometimes partly obscured. Legs black, base of all the tibiæ and the first two, or more usually the first three, joints of the front and middle tarsi light yellow; the front and middle tibiæ, except their base, and the hind tarsi, brownish, the second joint of the hind tarsi more yellowish; hind femora moderately thickened, less so in the female; hind coxæ of the male with a small, sharp spur below.

Wings nearly hyaline, only faintly tinged with brownish on the outer part.

In all the eastern specimens that I have examined the pile of the thoracic dorsum is light colored; some of the western specimens are quite the same, but the larger proportion of those from the Pacific Coast have black pile. In all I have examined about fifty specimens from Maine, New Hampshire, Massachusetts, Connecticut, New York, Pennsylvania, Canada, Georgia, Florida, Kansas, Colorado, Arizona, California, Washington Territory, and Oregon.

Xylota subfasciata.

Xylota subfasciata Loew, Centur., vi, 57.

Habitat.—Red River of the North (Lw.).

♂, ♀. Length, 8 to 9mm. Obscurely bronze green; second and third segment of the abdomen luteous, with a slender stripe and a posterior cross-band (that on the second narrow, on the third broad) black, lateral margins blackish bronze; antennæ wholly black, the arista of the same color; legs black; base of the front and middle tibiæ and the first two joints of their tarsi luteous; tip of the hind tibia not produced into a tooth, the angle below, however, rather acute, hind coxæ of the male dentate.

Similar to *X. quadrimaculata* [*X. ejuncida*], but the antennæ are wholly black, the luteous spots of the abdomen are larger and the black stripe separating them more slender; the tibiæ are more obscurely colored, and the hind pair have a less acute spur at the tip. The spots of the female abdomen are less luteous, sometimes in part, rarely wholly, metallic. Loew, l. c., translation.

Xylota fraudulosa.

Xylota fraudulosa Loew, Centur., v, 41.

Habitat.—New York, New Hampshire, Washington Territory!, Illinois, Wisconsin (O. S.).

♂, ♀. Length, 7mm. Front of female somewhat metallic green; frontal triangle and the face covered with gray pollen. Antennæ reddish brownish, the first two joints blackish, the arista black, but reddish at the base. Thorax shining, somewhat metallic green, with four faintly coppery dorsal stripes. Abdomen: the first segment, the fourth and shining metallic; in the male the second and third mostly each with two large quadrate yellow spots contiguous argins; in the female smaller and separated from the ck, somewhat greenish; knees, base of front and ro or three joints of the front and middle tarsi ermediate joints of the hind tarsi more brown; thickened; the hind coxæ without tubercle benged with blackish.

This species is very similar to *X. ejuncida*. The arista, however, is reddish at the base, the abdominal spots are more quadrate in shape, and more yellow; the legs are blacker, and the hind femora much more swollen, and the coxæ without tubercle. According to Loew (l. c.) "it is similar to *X. bifasciata* Meig. [*X. nemorum*] of Europe, but is a little smaller, the pile shorter, and the arista of the antennæ is not wholly black, but luteous at the base."

Xylota nemorum.

Milesia nemorum Fabricius, Syst. Antl., 192, 17.
Milesia iguava Fallen, Syrph., 11, 6.
Xylota nemorum Meigen, Syst. Beschr., iii, 219, 11; Macquart, Hist. Nat. Dipt., i, 521, 3; Zetterstedt, Ins. Lapp., 585, 3; Dipt. Scand., ii, 871, 3; Schiner, Fauna Austr., i, 356; v. d. Wulp, Tijdschr. voor. Ent. xxvi, Amerik. Dipt., 3, 8, 45.
Xylota bifasciata Meigen, Syst. Beschr., iii, 219, 10.
Xylota nigripes Zetterstedt, Ins. Lapp., 585, 4; Dipt. Scand., ii, 880, 14.

Habitat.—Europe (auct.), Canada (v. d. Wulp).

This species is given on the authority of Mr. v. d. Wulp (l. c.), who in a letter to the writer says, "*X. nemorum* F. differs from *X. fraudulosa* Loew not only in the size, the longer pile, and the arista not being yellow at the base, but also in totally lacking the cupreous stripes of the thorax, which are present in *X. fraudulosa*. I believe the species are distinct." Length, 8.5^{mm}.

Xylota angustiventris. (Plate XI, fig. 9.)

Xylota angustiventris Loew, Centur., vi, 58.

Habitat.—Illinois (O. S.), New York, Pennsylvania!

♂, ♀. Length, 10 to 11^{mm}. Frontal process very prominent, the face much receding, thickly covered with white pollen. The frontal triangle pollinose like the face, except a bare shining spot above the base of the antennæ. Antennæ brownish black, the third joint large, oblong ovate; the arista black. Thorax shining, somewhat metallic greenish or bluish black; a sericeous spot on the inner side of each humerus; pile of mesopleuræ white. Abdomen long and slender, shining metallic blackish green or blue; the second segment with a slender median stripe and posterior part, dilated in the middle, and the posterior half of the third segment, opaque black; second segment with two oblong, narrowly separated, yellow or luteous spots in the male; in the female wanting. Legs black; base of all the tibiæ, tip of front and middle tibiæ, first three joints of front and middle tarsi, and second and third joints of hind tarsi, whitish yellow; hind metatarsi brown or blackish; hind femora moderately swollen; hind coxæ in the male with a tubercle below; hind tibiæ not produced into a spur at tip, but obtuse. Wings, except the basal third, slightly infuscated, anterior crossvein very oblique.

Two males (Auxer, Keen), and a female of which the head is wanting.

Xylota curvipes.

Xylota curvipes Loew, Neue Beitr., ii, 19; Osten Sacken, Bull. Buf. Soc. Nat. Sci., iii, 70; Cat. Dipt., 252.

? *Xylota satanica* Bigot, Annales Soc. Ent. Fr., 1884, p. 546.

Habitat.—New Hampshire, New York, Minnesota, California.!

♂, ♀. Length, 15 to 16mm. Head black with a greenish reflection; the sides of the front and face with white pollen. Antennæ brownish red, the arista brown. Thorax above of a shining black color, with very indistinct stripes and sparse yellow and black pile; a faint pollinose spot on the inner side of the humeri; pleuræ black, with yellow and black pile. Abdomen elongated, shining blue-black. Legs reddish yellow (not including the coxæ, except a reddish spot on the hind trochanters behind), the hind femora on the distal fourth, the hind tibiæ and tarsi wholly, black; hind femora much swollen and their tibiæ much curved and terminating in an obtuse spur; pile of the femora long and yellow and on the inner side of the hind tibiæ thick and black; in the female the pile of the legs less abundant and shorter. Wings distinctly tinged with brown on the distal half; stigma dark brown.

A single male taken near the base of Mount Washington, August 1; a female from the same State (F. H. Fall); another from New York (Professor Lintner); and others from Minnesota (E. Keen, July) and California. Comparison is yet needed of American and European specimens to determine the identity of ours with *X. curvipes* Loew.

Bigot in his description of *X. satanica* does not mention the black on the tip of the hind femora, otherwise his description shows no important differences.

Xylota vecors.

Xylota vecors Osten Sacken, Bull. Buff. Soc. Nat. Sci., iii, 69; Cat. Dipt., 252.

Habitat.—White Mountains, New Hampshire (O. S.)!

"♂, ♀. Thorax brownish bronze color, abdomen black; legs, including the coxæ, ferruginous; end of hind femora, the hind tibiæ and tarsi black. Length, 13 to 14mm.

"Face and cheeks black, with a greenish reflection and a delicate whitish down on the sides. Antennæ reddish brown; front black, with some black, erect hairs. Thorax brownish bronze color, with indistinct longitudinal greenish stripes; pubescence sparse, short, erect, brownish yellow, mixed with black; a whitish, sericeous spot inside of the humeri; pleuræ greenish black, with blackish hairs. Scutellum greenish bronze color. Abdomen black, with a bluish or purplish reflection and scattered whitish and black hairs. Knob of halteres black, stem reddish. Legs ferruginous, including the coxæ; the tip of ungues brown; the distal third of the hind femora, the hind tibiæ, and hind tarsi black. Wings tinged with brownish, proximal half more hyaline; stigma brown.

"Three males and two females.

"In general appearance this species is very like the

rata, but it differs especially in the color of the coxæ, which in the latter are black. Minor differences are that in *X. femorata* the wings are more uniformly colored, less tinged with brown on the distal half, the stigma paler, etc."

Original description, compared with the type specimen in the Museum of Comparative Zoology at Cambridge.

Xylota chalybea.

Xylota chalybea Wiedemann, Auss. Zwei. Ins., ii, 98.

Habitat.—Pennsylvania, Virginia! Illinois (O. S.).

♂. Length, 12mm. Head and antennæ black, the face lightly dusted on the sides. Dorsum of thorax violet steel-black, with short black pile; inner sides of the humeri with a distinct silvery spot; pleuræ black. Abdomen steely blue black, with white pile on the sides in front. Legs wholly black, with black pile; hind femora much thickened, hind tibiæ arcuated and terminating in a spur; hind coxæ without tubercle below. Wings blackish brown, less intense behind.

Two specimens. The species will be easily recognized by the entire absence of yellow in its color, by the dark wings, etc.

Xylota obscura.

Xylota obscura Loew, Centur., vi, 55.

Habitat.—Red River of the North (Lw.), Oregon, California!

♀. Length, 10mm. Head black, front considerably prominent, and the face moderately excavated. Antennæ rather large, first two joints black fuscous, third reddish-ferruginous, rounded, arista wholly black. Thorax obscurely bronze-green, no white pollinose spot near the humeri. Scutellum of the same color. Abdomen rather broad; first segment black, shining; second segment, except two large, subtriangular, shining bronze, whitish pilose spots, black, black pilose, and sub-opaque; third segment with similar spots coalescing into a fascia; fourth segment wholly shining metallic, the posterior margin rather more blackish; fifth segment shining black. Venter wholly scoriaceous black. Legs black, hind femora slightly thickened, base of all the tibiæ dilutely lutescent, the tip of the hind tibiæ not produced into a tooth, first two joints of the four front tarsi reddish-ferruginous, or reddish fuscous, hind tarsi wholly black, below pallidly tomentose. Wings sub-hyaline, stigma fuscous, anterior cross-vein long and much oblique.—Translation.

Xylota barbata.

Xylota barbata Loew, Centur., v, 40.

Habitat.—Sitka (Lw.).

♀. Length, 10mm. Head broad, black. Front moderately projecting, black pilose. First two joints of the antennæ black, third blackish-brown, sub-rotund; arista black. Face moderately excavated, white pollinose. Pile on the posterior orbits below white, rather longer than in Xylotæ. Dorsum of thorax obscurely coppery metallic, mod-
se. Abdomen rather broad, blue black, sub-

opaque, clothed with very short black pile; first segment wholly steel blue, shining, white pilose; second segment with a steel-blue, very broad, shining, sub-entire fascia, clothed with white pile; the two following segments near the anterior margin with a similar fascia, but interrupted and less broad. Legs black, white pilose, femora at the tip with short black pile, the hind femora not incrassate; front tibiæ reddish brown; middle and hind tibiæ at the base, and the first two joints of the front tarsi, brownish red. Wings cinereous, basal half hyaline, stigma blackish, veins black.

♂. The abdomen somewhat narrower, the metallic bands of the second and third segments somewhat luteous, the hind femora a little thickened, the hind coxæ unarmed.

One female from Oregon, another from Washington Territory, and a male from California. The color of the thoracic dorsum in these females is a cobalt blue with a distinct coppery reflection; in the male the coppery luster is almost wholly wanting. The metallic blue cross-band of the fourth segment of the abdomen in my specimens does not appear to be interrupted, but entire. The usual narrow pollinose band on the front of the female and the sericeous spots on the inner side of the humeri are present.

Xylota elongata, n. sp.

Habitat.—New Hampshire, Pennsylvania!, Missouri?

♀. Length, 10 to 11mm. Front, narrow above, shining black, pollinose across the middle. Face black, thickly whitish pollinose, narrowly shining on the cheeks. Antennæ black, third joint large, black, elliptical, arista wholly black. Dorsum of thorax shining, somewhat metallic greenish black, obsoletely coppery striped; humeri sericeous. Pleuræ shining black, white pilose. Abdomen elongate, narrow, shining bluish metallic black; second segment with a spot in the middle in front and the posterior part, and the third segment, except a large triangular spot on in each side in front, subopaque; fourth segment, except on the posterior part, and the fifth wholly, shining black; the pile on the metallic portions is nearly white. Femora, except the immediate tip and the last two joints of all the tarsi, black; four front tibiæ, except a broad preapical blackish ring and the three basal joints of the four front tarsi, very light yellow; hind tibiæ at base light yellow, beyond black; three basal joints of hind tarsi brown, with yellow tips. Wings hyaline, stigma, and the remainder of subcostal cell brown.

Three specimens, White Mountains, August 1, Missouri (Theo. Pergande), and Pennsylvania (E. L. Keen). The color of the legs prevents the identification of this species with Bigot's *X. metallifera*. *Xylota fasti-frons* Walker (List, etc., 557), may possibly be this species, but the antennæ are not dark ferruginous. The length of the abdomen, as Walker describes it, "abdomen linear, a little [illegible] and fully twice as long," applies better [illegible]

Xylota Anthreas.

Xylota Anthreas Walker, List, etc., iii, 556.

Habitat.—New Jersey (Walker), New Hampshire!

♀. Length, 9mm. Front narrow above, shining black, whitish pollinose in the middle and on the sides below. Antennæ black, third joint subquadrate, reddish brown; arista luteous at the base. Face black, whitish polinose, except on the cheeks. Thorax shining black, somewhat metallic; pile short, appressed, light colored; humeri sericeous pollinose; pleuræ black, shining, lightly pollinose. Abdomen black, but little shining; first and fourth segments shining; second, third and fourth segments each with a large, subtriangular, shining metallic, white pilose spot on each side, those of the third narrowly separated, those on the fourth confluent. Legs black, white pilose; the immediate tip of the femora, and the base of all the tibiæ, the tips of the four front tibiæ, and the first three joints of their tarsi, yellow; the tip of the hind tibiæ, and the basal joints of their tarsi, fuscous yellow. Wings nearly hyaline; stigma luteous.

One specimen, New Hampshire. Differs from *X. elongata* in the shape and color of the third joint of the antennæ, and in the less elongate abdomen; from *X. obscura* in the front of the female being narrower above, the four front tarsi lighter yellow on the basal joints, and in the base of the arista being luteous.

Xylota metallica.

Xylota metallica Wiedemann, Auss. Zw. Ins., ii, 102.

Habitat.—Georgia (Wied).

Thorace æneo, abdomine nigro; maculis quatuor magnis quadratis luteis. Mit erzgrünem Rückenschilde und schwarzem Hinterleibe, mit vier grossen viereckigen gelben Flecken.—3¾ Linien.

Fühler ocherbraun. Untergesicht metallisch schwarz, weissschimmernd. Stirn schwarz. Rückenschild erzgrün, mit vier sehr schwach kupferröthlichen Striemen und weissschimmernden Schultern. Brustseiten schwärzlich, mit breiter weissschimmernden Binde. Schildchen erzgrün. Hinterleib schwarz, zweiter und dritter Abschnitt jeder an jeder Seite mit einem grossen, die Wurzel berührenden, zwei Drittel der Länge des Abschnitteseinnehmenden, in gewisser Richtung opalisirenden Flecke; der schwarze Raum zwischen den Fleckenpaaren nur schmal; vierter Abschnitt überall metallisch schwarz. Flügel und Schwinger gelblich, Randmal lehmgelb. Beine rostgelblich, wenig weisslich schimmernd; hinterste verdickte Schenkel schwarz, mit Rostgelber Wurzel; Spitze der vordern Schenkel braun; hintere Schienen und der Spitze aller Füsse braun.—Wiedemann.

Length, 7.5mm. Antennæ ochre-brown. Face metallic black, whitish pollinose. Front black. Dorsum of thorax bronze-green, with very [illegible] very reddish stripes and white sericeous humeri. Pleuræ [illegible] white pollinose stripe. Scutellum bronze-green.

Abdomen black; on each side of the second and third segments with a large spot, touching the base, and including two-thirds of the length on the sides, in some reflections opalescent; the black interval between the spots slender; fourth segment wholly metallic black. Wings and halteres yellowish; stigma luteous. Legs reddish yellow, a little whitish pollinose; hind femora thickened, black, with a reddish yellow base; tip of the anterior femora brown; posterior tibiæ, and the tip of all the tarsi, brown.—Translation.

The sex is not mentioned. The species must resemble *X. fraudulosa*, but has much lighter-colored legs.

Xylota metallifera.

Xylota metallifera Bigot, Ann. Soc. Ent. Fr., 1884, 545.

Habitat.—Colorado.

♂. Long. 10^{mm}. Tota cinereo villosa. Antennis castaneis; fronte et facie albis, genis et facie, utrinque, superne nigro pictis; thorace et scutello obscure ænescentibus, thorace obscure chálybeo vittato; calyptris albis, halteribus testaceis; abdomine nigro opaco, segmentis secundis et tertiis, utrinque, hyacintho notatis, quartis et quintis similiter tinctis; pedibus nigris, longe, sat dense, albido villosis; alis fere hyalinis, macula stigmaticali pallide fusca.

Corps entièrement couvert de longs poils gris, clairsemés; face et front blanchâtres, les joues et les côtés, près des antennes, à reflets noirâtres; thorax d'un noir bronzé, obscurément marqué de bandes bleuâtres; écusson de même couleur que le thorax; cuillerons blancs, balanciers testacés; abdomen d'un noir opaque, 2^{e} et 3^{e} segments, de chaque côté, avec une macule ovalaire allongée, la base des 4^{e} et 5^{e} segments, d'un bleu métallique; pieds noirs, cuisses couvertes de poils blanchâtres clairsemés; ailes presque hyalines, un peu roussâtres sur les nervures transversales ainsi qu'au stigmate. 1 specim.—Bigot, l. c.

Xylota coloradensis.

Xylota coloradensis Bigot, Ann. Soc. Ent. Fr., 1884, 544.

Habitat.—Colorado.

♂. Long. 10^{mm}. Antennis obscure testaceis; fronte et facie cinereo albido; thorace scutelloque obscure ænescentibus; calyptris albis, halteribus testaceis; abdomine, segmento 1^{o}, 4^{o} et 5^{o} nigris, 3^{o}, 4^{o} et 5^{o} flavo anguste marginatis, 2^{o} et 3^{o} fulvis, 3^{o} et 4^{o} macula lata, utrinque profunde bifida, 3^{o} vitta mediana, retrorsum dilatata, nigris; pedibus nigris, geniculis fulvis; alis hyalinis, macula stigmaticali testacea.

Antennes d'un fauve obscur; front et face couverts d'une pruinosité blanchâtre; thorax, écusson noirs avec quelques reflets bronzés, épaules blanchâtres; cuillerons et balanciers testacés; corps couvert d'un très fin duvet clairsemé, jaunâtre; abdomen avec les 1er, 4^{e} et 5^{e} segments noirs, 3^{e}, 4^{e} et 5^{e} finement bordés de jaune pâle, 2^{e} et 3^{e} de fauve rougeâtre, 3^{e} avec une large bande mediane noire, profi

Comstocki. (Plate XI, figs. 1, 1*a*, 1*b*.)
ister Comstocki Williston, Proc. Am. Phil. Soc., xx, 326.

—New York!

gth, 12^{mm}; of wing, 8^{mm}. Face yellowish, blackish towards
e, and covered with silvery white pubescence. Frontal tri-
kish, whitish near the eyes. Antennæ yellowish-red; arista
ertical triangle opaque black. Thorax black opaque, nearly
sum with four conspicuous olive-gray stripes, nearly equi-
e lateral ones reaching from the yellowish humeri; pleuræ
sted with whitish, especially on the meso and sterno pleuræ,
rms a conspicuous stripe; scutellum with a yellow margin.
blackish-brown; first segment as broad as the thorax, nearly
ow on the sides; second segment elongate, scarcely half as
d, with two whitish elongate spots, not reaching the hind
ird segment of the same length, narrow, cylindrical, yellow
arrowly above, broadly on the sides; fourth segment as long
eding, expanded posteriorly, forming with the globular hypo-
ellipsoidal mass. Legs reddish-yellow, hind femora brown-
n the basal half; hind tarsi brownish. Wings nearly hya-

imen (Prof. J. H. Comstock).
's description and figure of *S. coerulescens* agree quite with
species, except that the conspicuous thoracic stripes are not
nor indicated. Was the specimen he described in good pres-
Bigot's *Acrochordonodes vittatus* (Bull. Soc. Ent. France, 131,
e) applies very well indeed. Is it possible that they all per-
widespread species?

SYRITTA.*

St. Fargeau and Serville, Encycl. Meth., x, 808, 1825.
Zetterstedt, Ins. Lapp., 584, 1840.

mall, slender species, nearly bare, black, with yellow mark-
d hemispherical, not at all flattened, somewhat broader than
. Antennæ short, third joint round; arista bare. Face
arinate, nearly straight, epistoma but slightly produced.
very large, contiguous in the male. Thorax rather long,
hin on its edge, dark-colored. Abdomen slender, more con-
the male, about twice as long as the thorax, and not wider.
middle legs slender and small, the hind femora extraordi-
ened, with short rigid spines below; hind tibiæ bent. Mar-
f wing open; third vein gently curved; anterior cross-vein
idle of discal cell rectangular. Type of genus, *S. pipiens*

* Συριζειν, to hum.

yellow spots, forming a broadly interrupted fascia, behind these spots black violaceous, the posterior margin metallic blue. Venter pallid yellowish, first segment metallic blue, the last violaceous. Trochanters with the immediate base of the femora yellowish. Femora greenish bronze, the extreme tip of the front and middle pairs yellowish; hind femora moderately thickened, with an obtuse projection below near the tip on the lower side, and on the margin of the projection with black spines. Front and middle tibiæ very pallidly yellowish, nearly white; hind tibiæ incurved, the basal third whitish, middle third black-violaceous, distal third black; basal joints of tarsi light yellow, third joint fuscous, the last two black. Tegulæ white, the margin and the cilia black. Halteres dilutely yellowish. Wings cinereous hyaline, near the tip a little more obscure, stigma and veins black.

ADDITIONAL NORTH AMERICAN SPECIES.

Xylota arcuata Say, J. Acad. Phil., vi, 162; Compl. Wr., ii, 357.—**Mexico.**
Xylota subcostalis Walker, Trans. Ent. Soc. N. S., v, 291.—**Mexico.**

SENOGASTER.*

Senogaster Macquart, Hist. Nat. Dipt., i, 519, 1834; Dipt. Exot., ii, 2, 72.
Acrochordonodes Bigot, Bull. Soc. Ent. de France, 1878, 131.

♂. Slender, nearly bare, rather large species. Head hemispherical, formed chiefly of the eyes. Antennæ situated near the middle of the head in profile, first two joints short, third rather large, oval; arista bare. Face small, short, subcarinate, concave from antennæ to oral margin, epistoma truncate obliquely in front, margin of mouth horizontal below; cheek very narrow below the eyes. Eyes large, bare, with an area of enlarged facets in front above the antennæ; frontal triangle small, eyes contiguous for a short distance, vertical triangle long, acute; posterior orbits narrow. Abdomen long, third segment very much contracted, cylindrical, narrow, the abdomen again widened at the end. Hind femora arcuate, thickened, with a strong bifid spine below, near the tip. Wings small, shorter than the abdomen, marginal cell open, third longitudinal vein bent gently into the first posterior cell, last section of fourth vein gently sinuate, anterior cross-vein oblique, joining the fourth vein beyond the middle of discal cell.

It seems very probable that *Acrochordonodes* Bigot is but the female of a true *Senogaster*. The character in which this genus, founded upon a female specimen, is said to differ, is precisely what might be expected in that sex, viz, a less contracted abdomen. The type of *Senogaster* is *S. coerulescens* Macquart (l. c.), from Cayenne, South America.

* Στενός, slender; γαστήρ, abdomen.

Syritta pipiens (Plate XII, figs. 1, 1*a*, 1*b*, 1*c*).

Musca pipiens Linné. Fauna Suecica, p. 1822, 1761; Schrank, Enum. Insect. Austr., 915.

Conops pipiens Scopoli. Entom. Carniolica, 969.

Syrphus pipiens Fabricius, Spec. Insect., ii, 434, 65; Entom. Syst., iv, 310, 119; Panzer, Fauna Germ., xxxii, 20.

Milesia pipiens Fabricius, Syst. Antl., 194. 27; Fallen, Syrph., 12, 9.

Coprina pipiens Zetterstedt. Ins. Lapp., 584, 45.

Xylota pipiens Meigen, Syst. Beschr., iii, 213, 1.

Xylota proxima Say. Amer. Ent., i, pl. viii: Compl. Wr., i, 16; Wiedemann, Aus. Zw. Ins., ii, 102, 9.

Syritta pipiens Macquart, Hist. Nat. Dipt., i, 525, 1; Meigen, Syst. Beschr., vii, 113, pl. lxvii, fig. 21; Zetterstedt, Dipt. Scand., ii, 881, 1; viii, 3193; Schiner, Verh. Zool.-Bot. Gesellsch., vii, 424; Fauna Austr., i, 357.

Habitat.—Throughout the United States!, Europe, Asia, Africa.

♂ ♀. Length, 7 to 8^{mm}. Face and front satiny, yellowish white. Front of female narrow above, shining black on upper half with two small pollinose spots; vertical triangle of male elongate, shining black, pollinose in front. Antennæ reddish yellow. Dorsum of thorax black, bare in front, with two approximate pollinose spots; the humeri and behind them, reaching to the suture, yellowish white pollinose. Pleuræ thickly whitish pollinose. Abdomen in the male as follows: Black, first three segments opaque, the fourth and the hypopygium shining; the narrow sides of the first segment, and a broad spot on each side of each of the two following segments, yellow, often whitish pollinose; fourth segment in front with a narrow interrupted yellowish white pollinose cross-band, the hind margin of the segment narrowly yellow. In the female the spots smaller, the sides of the third segment in front metallic, scarcely at all yellow, but with a light pollinose spot; otherwise like the male. Four front legs yellowish red, with obscure brownish markings; hind femora black, with the base and a usually incomplete ring near the middle, reddish yellow; hind tibiæ reddish yellow, at the middle and tip brown or black; hind tarsi reddish yellow, more or less brown on the upper side. Wings hyaline.

The most common species in the family, everywhere and at all times abundant from spring till autumn.

ADDITIONAL NORTH AMERICAN SPECIES.

Xylota Mexicana Bigot, Ann. Soc. Ent. Fr., 1884, 539.—Mexico.

CHRYSOCHLAMYS.*

Eristalis cuda Rondani, Ann. delle Scienze Nat. di Bologna, 1844.

Chrysochlamys Rondani in litt.; Walker, Insect Brit., i, 279, 1851.

Moderately large species, metallic-golden or bronze-green, with light [illegible] stripes on the dorsum of the thorax. Head hemi[illegible] somewhat broader than the thorax. Antennæ short, th[illegible] ir

Χρυσός, gold; *χλαμύς*, a mantle.

the upper half or two-thirds, yellowish-red below; the arista reddish. Thorax beset with blackish or lutescent pile, lateral margins and a stripe of even width each side of the middle, cinereous pollinose; bristles black; scutellum lutescent or yellowish, with short yellow pile. Abdomen pure bronze-colored, densely beset with short golden-yellow pile in the female, somewhat darker in the male; the black sub-opaque hind borders of second and third segments sub-interrupted. Legs saturate yellow; the last two joints of tarsi infuscated or blackish; the four front femora (male ♀) may have a dark-brown spot in front. Wings yellowish hyaline on the antero-proximal portion, grayish hyaline along the posterior portion; costal cell yellow, stigma darker; a brown cloud, in the shape of a short cross-band, between the origin of the third vein and the cross-vein at the base of the last posterior cell; anterior cross-vein likewise clouded with brown.

Four specimens (D. W. Coquillett, Professor Riley, G. J. Bowles).

Chrysochlamys buccata.

Chrysochlamys buccata Loew, Centur., iv, 72.

Habitat.—Virginia (Lw.).

♀. Length, 8mm. Bronze colored; scutellum testaceous; front black, with a cross-band of ochraceous pollen in the middle; antennæ black above, reddish below; arista reddish; cheeks with a black stripe. Blackish-bronze colored, greenish shining; front deep black, shining, with short black pile; in the middle a rather broad cross-band of ochraceous pollen. Antennæ rather large; first joint black, the second and third joints black above, reddish below; arista bare, reddish. Face reddish yellowish, very concave and ochraceous pollinose above, swollen below, with a large obtuse, somewhat brownish tubercle; cheeks separated from the face by a narrow black stripe. Dorsum of thorax clothed with short lutescent pile; lateral margins, and two longitudinal stripes of even width, cinereous pollinose. Scutellum reddish, with short lutescent pile; bristles on the margin black; lateral corners blackish. Abdomen shining, with short lutescent pile; hind margin of first and second segments opaque black. Legs ochraceous, the basal half of the four front femora and the tip of all the tarsi black; front tibiæ, except the base and tip, and the base of the hind femora, slightly subinfuscated. Wings somewhat cinereous hyaline, lutescent near the base; costal cell and stigma luteous, the base of the third vein and the cross-veins at the middle of the wing clouded with black.—Translation.

Chrysochlamys nigripes.

Chrysochlamys nigripes Osten Sacken, West. Dipt., 341.

Habitat.—Massachusetts (O. S.).

"♂, ♀. Length, about 9mm. General color much duller than in *C. dives*, metallic blackish-green; pollen on the face and front dull yellowish; frontal pollinose cross-band (♀) much narrower, and hence

black shining space above the antennæ larger. The prevailing pubescence on thorax and scutellum is black; black, opaque hind margins of the segments two and three in the male only, *not in the female*. Femora brown, except the tip; tibiæ brownish yellow, more or less infuscated before the tip, especially the front pair; tarsi brownish red at base, brown at tip. Wings grayish hyaline, feebly tinged with brownish yellow at the root and on the stigma; costal cell sub-hyaline in the female; brownish clouds on cross-veins very weak."—O. Sacken, l. c.

MERAPIOIDUS.

Merapioidus Bigot, Bull. Soc. Ent. de France, 1879, 64.

Large, pilose species; black, with metallic bands on the abdomen. Head subtriangular in front view. Front of female short, but little inclined, nearly plane, moderately broad. Antennæ: first joint slender, cylindrical, about three times as long as the short second joint; third joint very broad, short, in front slightly concave, below the insertion of second joint prolonged downward, obtuse; above extended into a conical point, slightly convex on the upper posterior part and terminating in the arista, which is a little thickened at its base. Face extending downward, not descending far below the eyes, obtusely conical below, gently concave below the antennæ, and with an obtuse tubercle. Eyes bare. Abdomen depressed, broad, elliptical. Legs simple. Wings: marginal cell open; third longitudinal vein nearly straight; last section of fourth vein slightly sinuate, joining the third before the costa; anterior cross-vein oblique, joining the fourth vein near the outer third of the discal cell. Type of genus, *M. villosus* Big., North America.

Merapioidus villosus. (Plate XI, figs. 2, 2*a*.)

Merapioidus villosus Bigot, Bull. Soc. Ent. de France, 1879, 64.

Habitat.—Georgia!

♀. Length, 14^{mm}. Front black, a little metallic, moderately shining, with reddish pollen and black pile. Antennæ black. Face, except broadly on the tubercle and thence to oral border, covered with dense whitish-yellow dust and whitish pile. Cheeks black, shining. Proboscis short. Pile on the lower posterior orbits long, whitish. Thorax obscurely metallic, moderately shining, the pile moderately thick and rather long, more abundant and whitish on the pleuræ; post-alar callosities with tufts of thick, long, whitish pile. Abdomen opaque black, with long whitish pile on each side near the base and along the lateral margins, elsewhere short; first segment with a small shining spot on the hind margin on each side; second segment with a large subtriangular spot on each side and narrowly in the middle behind; third segment with a broad fascia, broadly interrupted, and a small obtuse, posterior, median triangle; fourth segment with a narrower fascia narrowly interrupted; fifth segment on the anterior margin, shining

metallic. Legs black, with white pile; femora at tip, and tibiæ at base and tip, reddish. Wings hyaline; subcostal cell from tip of auxiliary vein yellowish; cross-veins faintly clouded.

One specimen which agrees sufficiently well with Bigot's description of male and female.

SPILOMYIA.*

Spilomyia Meigen, Illiger's Magazine, ii, 273, 1803.
Mixtemyia Macquart, Hist. Nat. Dipt., i, 491, 1834.
Calliprobola Rondani, Dipt. Ital. Prodr., i, 47, 1856.

Large robust species, black with bright yellow spots or bands on thorax and abdomen—wasp-like in appearance. Head hemispherical, broader than the thorax. Antennæ porrect, moderately or considerably elongated, the third joint usually rounded, not twice as long as broad; arista bare. Eyes bare, contiguous in the male. Face nearly vertical, gently concave in profile below the antennæ, only a little tuberculate below, if at all. Thorax short and broad, considerably convex above, with yellow spots. Abdomen twice or more as long as the thorax, very convex above, usually of nearly equal width throughout, sometimes gently or broadly oval; with yellow bands. Legs strong; hind femora elongate, with a projecting tooth below near the outer part. Wings brownish in front; marginal cell open, third longitudinal vein nearly straight, the vein beyond the tip of the anal cell is continued outward, nearly parallel to the hind border of the wing.

Type of genus, *S. diophthalma* Linné, Europe.

TABLE OF SPECIES.

1.—Second joint of antennæ much longer than the first; second segment of the abdomen with a broad arcuate yellow band, the third and fourth with a slender, median interrupted one . . . . . **quadrifasciata**

Second joint of the antennæ not much longer than the first; abdomen not so marked 2

2.—Abdomen yellow; first segment, except the lateral angles, black, each of the following segments with two narrow black bands, the one on the anterior margin entire, the others interrupted . . . . . **hamifera**

Abdomen black, with yellow cross-bands 3

3.—First and second abdominal segments wholly black, third with a posterior cross-band, fourth with two, the anterior one interrupted; abdomen broadly oval . . . . . **fusca**

First segment with a yellow side spot, the following each with two cross-bands, 4

4.—First, third, and fifth cross-bands interrupted (or sub-interrupted) the latter two distinctly dilated on the sides 5

First and third cross-bands entire . . . . . **longicornis**

5.—Pleuræ with five yellow spots besides the humeral and subalar ones; front of female with a black stripe . . . . . **interrupta**

Pleuræ with only four spots besides the humeral and subalar ones; front of female yellow across the middle; scutellum with a yellow, disconnected spot on each side . . . . . **liturata**

* Σπίλος, mountain; μυια, fly.

Spilomyia longicornis.

Spilomyia longicornis Loew, Centur., x, 49.

Habitat.—Illinois, Pennsylvania, District of Columbia, New England!, Texas, Kansas (O. S.)

♂, ♀. Length, 11 to 13^{mm}. Eyes of male contiguous, vertical triangle on the upper half black, below yellow; frontal triangle yellow, with a large triangular black spot above the antennæ. Front in female yellow on the sides, with a black stripe broad below, attenuated above, vertex black. Antennæ brownish black, sometimes partly, never wholly, brownish red, first two joints somewhat elongate, arista luteous. Face yellow, with a median stripe attenuate above, and a narrow stripe from the eyes to the oral margin, on the cheeks, black. Thorax black, humeri, and a rounded spot to the inner side, a Λ-shaped spot in front of the scutellum, and a vittula running from each post-alar callosity to near the suture, and then bent inwards, yellow, sometimes also a small yellow spot above the suture in front of the root of the wings. Pleuræ with five yellow spots beside the humeral and sub-alar ones; an elongate one on the meso-pleuræ and one below on the sterno-pleuræ, one just above the anterior coxæ, one on the ptero-pleuræ, and a broader one behind, below the tegulæ, the three latter nearly coalescent. Margin of scutellum yellow. Abdomen black opaque, second, third, and fourth segments each with two narrow yellow bands connected by the yellow lateral margins; first band dilated on the sides, the third and fifth usually very narrowly interrupted. Hypopygium yellow; in the female the fifth segment black, with a narrow yellow border. Legs yellow; front tibiæ except the base, and the front tarsi, black; hind femora sometimes darker towards the end; apex of hind tibiæ and the tarsi ochraceous. Wings sub-hyaline, in front brownish; last section of sixth vein nearly as long as the posterior basal cross-vein.

Spilomyia liturata, n. sp.

Habitat.—New Mexico!

♀. Length, 14^{mm}. Antennæ brownish red, elongate; first joint as long as the third, second joint a half longer than the first. Face bright yellow, with a slender black stripe, not reaching quite to the antennæ; front like the face, in the middle with a black stripe, broader below, very narrow just below the black vertex. Dorsum of thorax nearly opaque black, with bright yellow markings, as follows: a spot on the humeri, and one of nearly the same size on the inner side of each, post-alar callosities, extending as a slender vittula forwards, the anterior end of which is curved inwards, a spot on each side of the scutellum, a large oval spot on the meso-pleuræ, a smaller rounded one below on the sterno-pleuræ, one of about the same size on the sides of the metanotum, and a smaller one above the front coxæ. Abdomen nearly opaque black, with two yellow cross-bands on the second, third, and fourth segments; the first cross-band of each segment is rather broad, strongly dilated on

the sides, and only sub-interrupted in the middle; the posterior margins of the second-fifth segments with the bands of equal width throughout, not interrupted. Legs yellow; the four hind tibiæ at the tip and their tarsi reddish, the front tibiæ, except the base, and their tarsi black; hind femora broadly blackish on the posterior side. Wings with a brown anterior border, nearly hyaline behind.

One specimen, New Mexico (G. F. Gaumer).[1] The present species is nearly related to *longicornis* and *interrupta*, but is at once distinguishable from the former by the longer antennæ; from the latter by the antennæ being a little longer, by the abdominal bands being entire, or not distinctly interrupted; from both by the spots on the pleuræ, and the greater width of the abdominal bands.

Spilomyia interrupta. (Plate XII, fig. 4.)

Spilomyia interrupta Williston, Proc. Am. Phil. Soc., xx, 327.

Habitat.—Washington Territory!

♀. Length, 13 to 14^{mm}. Closely allied to *longicornis*, but differs in the bands of the abdomen being a little broader, the first, third, and fifth very distinctly interrupted, and the two latter more dilated on the sides; in the fifth segment in the female being in large part yellow, in the presence of a small yellow spot on the sides of the dorsum above the meso-pleuræ, in the spots of the pleuræ being smaller and distinctly separated from each other, not coalescent, and in the antennæ being little longer. The cheeks are darker, and the hind femora on the posterior side near the end may be quite black. The wing is broader, and the last section of the sixth vein is distinctly shorter. All of these differences may not be persistent in a large number of specimens, but they are certainly sufficient to show that the species is distinct.

Two specimens, Washington Territory. The relationship of *S. longicornis*, *S. liturata*, and *S. interrupta* with the European *S. saltuum* and *S. diophthalma* is remarkably close.

Spilomyia fusca.

Spilomyia fusca Loew, Centur., v, 34.

Habitat.—Pennsylvania, Massachusetts, New Hampshire, Georgia, Canada!

♂, ♀. Length, 16 to 17^{mm}. Head light yellow, somewhat shining, and with short, sparse, whitish pile; vertex, an incomplete frontal stripe below, and an oval spot on the face, black. Antennæ reddish black, the first two joints often quite black. Occiput black, orbits whitish pollinose. Thorax opaque brownish black, with yellow markings as follows: humeri a rounded spot at their inner side, two oval spots, forming an obtuse angle, in front of the scutellum, a vittula on each side, extending from the post-alar callus and bent inwards in front to meet the suture, margin of scutellum, a large meso-pleural, a smaller sterno-pleural and another above the base of the front coxæ. Abdomen broadly oval, brownish black, very shortly black pilose; third segment with a yellow band on

the posterior border, and on each side near the middle with a small triangular spot; fourth segment with two fasciæ, the anterior one narrowly interrupted, the posterior one rather broad, on the hind margin. Hypopygium wholly light yellow. Venter blackish brown, the incisures light yellowish. Femora blackish, brownish, and yellow, varied; front tibiæ, except the yellow base, brown or black; middle and hind tibiæ light yellow, the tip dark ochraceous; front tarsi black, middle and hind tarsi like the tip of their tibiæ. Wings sub-hyaline, the anterior part brown.

Numerous specimens. The pile of the top of the head is blackish.

Spilomyia hamifera.

Spilomyia hamifera Loew, Centur., v, 33.

Habitat.—Pennsylvania, Virginia, Florida, Kentucky (Loew, O. S.), New Hampshire!

♀. Length, 17^{mm}. Head light yellow, front and face narrowly black vittate, the stripes more or less obsolete on the upper part of each; cheeks with a brownish-black stripe. Antennæ brownish, or brown, with the margins of the third joint darker. Vertex black; occiput blackish, the orbits with whitish pollen. Thorax black, with yellow markings as follows: on the anterior margin of the dorsum with four spots, a vittula reaching from the posterior angle to the suture, curved inwards in front, and two spots in form of an inverted V in front of the scutellum. On the pleuræ, beside the humeri, two large spots and a more whitish one above the base of the front coxæ, sometimes obsolete. Scutellum yellow, the base brownish or black; metanotum black, with a yellow spot on each side. Abdomen yellow; first segment, except the lateral angles, black; each of the following segments with two narrow black bands, the one on the front margin entire, the median one interrupted, or subinterrupted. The black band in front of each segment is narrowed near the lateral margin by a more or less large process from the yellow behind. Venter black, posterior margin of each segment yellow. Legs yellow, front tibiæ and tarsi black. Anterior portion of wings brown, posterior hyaline.

One specimen, White Mountains, New Hampshire, July 31.

Spilomyia pleuralis, n. sp.

Habitat.—Mexico!

♂. Length, 14^{mm}. Face yellow, a slender stripe in the middle, not reaching the antennæ, and a slender vittula on each cheek black. Antennæ dark brown, the three joints of nearly equal length. Frontal triangle shining black, narrowly along the eyes and on each side below white pollinose. Dorsum of thorax black, with the following light yellow marks: the humeri, a small spot on the inner side of each, a small spot near the outer end of the suture, a vittula running from each postalar callus and continued inwards as a pollinose spot, and two slender vittulæ in the shape of an inverted V in front of the scutellum; scutellum black, narrowly margined with yellow; pleuræ light yellow, the

sutures black. Abdomen black, lightly shining, in shape broadest at base of the second segment, then diminishing in nearly a straight line on each side to the tip of the fourth; second segment with a small yellow spot on each side; the second, third, and fourth each with a larger, sub-triangular spot on each side; second and third segments each with a slender posterior cross-band, that on the third narrowly interrupted in the middle; fourth segment with a large spot on each posterior angle, forming a broadly interrupted cross-band. Legs, including the coxæ, light yellow, the tips of front and hind tibiæ and their tarsi brown, hind femora broadly black along their upper surface except at their base. Wings hyaline, with the usual brown border in front.

One specimen, in the Osten Sacken collection at Cambridge.

Spilomyia (Mixtemyia) quadrifasciata. (Plate XII, fig. 3.)

Paragus quadrifasciatus Say, Long's Exped., Append., 377; Compl. Wr., i, 257.
Psarus quadrifasciatus Wiedemann, Auss. Zw. Ins., ii, 91, 2.
Mixtemyia quadrifasciata Macquart, Hist. Nat. Dipt., i, 491; tab. xi, fig. 8; Osten Sacken, Cat. Dipt, 139.

Habitat.—Canada, New Hampshire, Massachusetts, Connecticut, New York!

♂, ♀. Length, 12mm. Vertex black with whitish pile; below, the front of the female has a narrow yellow stripe of even width along the eyes; frontal triangle narrowly black immediately above the antennæ; vertical triangle long, yellow in front. Antennæ reddish brown or brownish black, the first joint reddish or yellowish, moderately elongated, second joint much so, nearly twice as long as the first; third joint trapezoidal, a half longer than wide; arista yellow. Thorax with a small spot on the humeri, a larger one to the inner side, a slender vittula above the wings, two slender spots in the form of an inverted V in front of the scutellum, the narrow margin of the scutellum, a large elongate spot on the meso-pleuræ, a large rounded one on the sterno-pleuræ, and a smaller one, sometimes obsolete, above the front coxæ, yellow. Abdomen elongate, cylindrical, scarcely wider than the thorax, with four yellow bands, the first broad, conspicuous, strongly arcuate, the convexity in front, situated on the second segment; the second and third on the middle of the third and fourth segments, slender, only a little arcuated, the second narrowly interrupted in the middle, the third usually entire; the fourth band on the posterior margin of the fourth segment; on the posterior angles of the second and third segments there is a small yellow spot, extending a short distance narrowly backward. The abdomen is a little shining, except on the second segment, with a faint bluish reflection; the pile on the hind part whitish. Base of hind and middle femora, basal two-thirds of hind and middle tibiæ and narrow base of front tibiæ light yellow; front legs elsewhere reddish brown, the tarsi more black; tip of middle and hind tibiæ and their tarsi light ochraceous; hind femora, except the base, nearly black. Wings elongate, brownish along the front border, hyaline behind.

pilomyia (Mixtemyia) ephippium.

Mixtemyia ephippium Osten Sacken, Bull. Buff. Soc. N. S., iii, 70; Cat. Dipt., p. 254.

Habitat.—Mexico (O. S.)!

♂. Length, 12mm. Face yellow, with a brown stripe in the middle, which does not quite reach the antennæ; the latter brown; second joint almost black; triangle of the vertex dark brown. Thorax dark brown; a brownish yellow angular line runs from the scutellum, above the root of the wings, turning inside to follow the thoracic suture and stopping before meeting the corresponding line on the other side; a less distinct angular line, on the anterior part of the thorax, begins on each side, at the yellow humeral tubercle, follows the anterior margin of the thorax and before reaching its middle, turns backwards; in the middle of the anterior margin, between the two angular lines, two delicate, short parallel yellow lines are perceptible. Scutellum brown in the middle, with yellow borders. Pleuræ brown; a yellow spot above the root of the front coxæ. Abdomen light brown; second segment with an arcuated yellow stripe, resting with its middle on the anterior, with its ends on the posterior margin, which is also yellow; the inside of the semicircle thus formed, is dark brown, velvety; the third and fourth segments are clothed with a fine sericeous down; the third has a distinct tubercle in the middle and is margined with yellow posteriorly; the fourth is traversed by a yellow cross-band in the shape of an inverted V, the ends of which do not reach the lateral margins; hypogynium brown. Anterior half of the wings brown, the posterior hyaline; the anal cell, the second posterior, the discal, and a part of the first posterior cell, as well as the whole posterior margin, including the lula, being hyaline (in *M. quadrifasciata* the second basal cell and the whole portion of the first basal, situated behind the spurious vein, are also hyaline). Legs; femora dark brown, the hind ones with a strong tooth on the under side; tibiæ yellowish brown, pale yellow at the base; front tarsi brown; middle and hind ones reddish brown, last two or three joints brown.—Osten Sacken.

This species, the type specimens of which I have examined in the Museum at Cambridge, is much like *quadrifasciata* in general appearance, but is easily distinguishable.

ADDITIONAL NORTH AMERICAN SPECIES.

Spilomyia pallipes Bigot, Ann. Soc. Ent. de Fr., 1883, 353.—Mexico.

TEMNOSTOMA.*

Temnostoma St. Fargeau and Serville, Encycl. Meth. x, 518, 1825.

In structure nearly like *Spilomyia*, but differs in the hind femora being without a tooth below on the outer part. The markings, more-

* *Τεμνειν*, to cut; *στομα*, mouth.

over, of the thorax and abdomen are composed of very dense pollen, and may be more or less effaced, whereas in *Spilomyia* they are of the ground color. Properly speaking, these characters are not of more than subgeneric value, as indeed they were so considered by Schiner. The species are, like those of *Spilomyia*, strikingly similar or identical with the European ones.

TABLE OF SPECIES.

1.—Abdomen with three or four yellow pollinose crossbands of nearly equal width . . . . . bombylans

Abdomen broadly oval, with more than four cross-bands, of unequal width . 2

2.—The thorax has, in addition to the other spots, two separated ones on each side on the suture 5

The thorax has, in addition to the other spots, only one, elongate spot on each side 3

3.—Femora mostly yellow; the distal part of the abdomen with broad yellow cross-bands leaving but very narrow black cross-bands 4

All, or at least the front, femora broadly black; the black interrupted cross-bands of distal portion of abdomen broader . . . . . aequale

4.—Scutellum, except the base, densely yellow pollinose . . . . . pictulum

Scutellum, except the base, shining metallic . . . . . excentricum

5.—Second segment of abdomen with a broad anterior cross-band, distal segments with three transverse black spots . . . . . alternans

Second segment without anterior cross-band, distal segments with a broad interrupted black cross-band; pile of scutellum black . . . . . venustum

Temnostoma bombylans. (Plate XII, fig. 6.)

Milesia bombylans Fabricius, Syst. Antl., 189, 8; Panzer, Fauna, viii, 11; Meigen, Syst. Beschr., iii, 233, 6; Macquart, Hist. Nat. Dipt. 1, 534, 6.

Milesia Zetterstedtii Fallen, Syrph., 8, 1.

Temnostoma bombylans St. Fargeau and Serville, Encycl. Meth., x, 518

Doros Balyras Walker, List, etc., iii, 577.

Spilomyia bombylans Schiner, Fauna Austr., i, 365.

Temnostoma obscura Loew, Centur., v, 36.

Temnostoma Balyras Osten Sacken, Cat. Dipt., 138, 253.

Habitat.—New York, Connecticut, White Mountains, Pennsylvania!

♂, ♀. Length, 10 to 11^{mm}. Face black, shining, covered with dense yellow pollen on the sides; cheeks bare and shining black. Frontal triangle black, clothed with yellow pollen, except above the antennæ. Eyes in the male narrowly separated. Front in female lightly pollinose on the sides. Face of male usually with a slight convexity in the middle, sometimes, however, quite straight or even gently concave throughout, as in the female. Antennæ varying from light yellow to quite brownish. Thorax nearly opaque black; humeri, the suture on each side, a small spot above the wings, and a vittula in the mesopleuræ thickly yellow pollinose. Abdomen black, but little shining, of nearly equal width throughout, a little oval in the female; the second, third, and fourth segments (in the female the fifth also) with a complete yellow band, moderately arcuated, the convexity approaching the front margin of the segments; all of the bands margined with opaque black.

shining black. Front legs black, immediate base of fem- and base of tibiæ, yellow; middle and hind femora black and tip; hind tibiæ usually with a broad blackish preapical middle and hind tarsi frequently blackish. Wings hyaline towards the base more reddish, beyond brown.

five specimens, mostly caught about blossoms of *Cornus pan-* the latter part of June. New York (Professor Comstock), nia (Keen).

description of *T. obscura*, Loew says: "A *T. bombylanti*, cui facei tuberculo minuto quidem, sed manifesto differt." But, tely, although the facial tubercle or convexity is not incon- in some specimens, in others it is absolutely wanting. From and because they agree throughout with the descriptions of pean specimens, I must agree with Jaennicke (Neue Exot. 4) in considering the species the same.

ma pictulum.

.—Pennsylvania!

ngth, 12 to 14^{mm}. Head black; face and front thickly clothed len-yellow pollen, a median stripe reaching from the vertex base of the antennæ to the oral margin, and the cheeks, bare, Antennæ wholly light yellow. Thorax black, with bright llinose markings as follows: A spot on the humeri, an inter- nd on the suture, a large oval spot in front of the post-alar o spots of about the same size as the last in front of the scu- early confluent, the scutellum, except the base, a spot on the ræ and one on the sterno-pleuræ. Abdomen golden-yellow first segment, the anterior margin of the second, and the very ont margins of the third and fourth, a cross-band on the mid- ond segment, not reaching the margins, similar, but success- rower ones (almost linear on the last), on the following seg- lack. Legs yellow; front tibiæ, except the base, and front p black. Wings brown along the front border, sub-hyaline

ecimens, Pennsylvania (Mr. Eugene L. Keen). Is most nearly *T. excentricum*, but the scutellum is golden pollinose, not shining; on the thorax are larger, and there are two separated spots of the scutellum instead of one triangular one; the median ds of the abdominal segments are not distinctly interrupted iddle, the front of the female is broader above and the insect .

ma excentricum.

ia excentrica Harris, Insects of New Eng., injur. to Veget.; Osten Sacken, l, 2rd ed., 609, fig. 267 (male).

estoma excentrica Osten Sacken, Cat. Dipt., 138, 253 (male).

.—Massachusetts, Tennessee!, Illinois (O. S.).

♀. Length, 6mm. Size and markings of head, thorax, and wings as in *T. aequale*, the legs "ochre-yellow, except the shanks and feet of the first pair, which are black" (Harris). Abdomen mostly yellow, first segment black, an anterior fascia and a middle one moderately broad on second, a very narrow interrupted black fascia on third, fourth, and fifth, and the hind margins of all the segments black. The narrow fasciæ might be better described as pairs of narrow transverse spots. The yellowish triangular spot in front of the scutellum is more conspicuous than in my specimens of *T. aequale*.

About the present species there has been some confusion, and I am not at all sure that I can definitely settle it. The three or four species are very closely allied, and only a considerable amount of material will enable one to determine with certainty their true relations. The differences only consist in the color of the femora, an additional spot on the thoracic suture, and the abdominal bands. The present species is apparently the same as the male that Osten Sacken described in Harris' Report (3rd ed., p. 609), the female of which he afterwards decided (Cat. Dipt., p. 253) does not belong with it, and which I have called *T. venustum*. The chief evidence that I have, however, is a specimen without abdomen, kindly loaned me by Mr. S. Henshaw, of the Boston Society of Natural History, bearing the label "179—T. W. H.," and which, most probably, was a specimen used by Harris when he made the brief description. This specimen has the single elongate sutural spot on each side, so that it cannot be *T. alternans;* the legs are, however, as he described them—that is, yellow, except the front tibiæ and tarsi, while *aequale*, according to Osten Sacken's and my own observations, always has the femora more or less black. A single specimen that I have from Tennessee agrees both with this and the males Osten Sacken described, the abdomen being as I have described it above. Hence I think that the conclusion here given is the correct one; at least we have no evidence to gainsay it. That it is nothing more than a variety of *aequale* I am not prepared to say; in such case this name will have precedence.

Temnostoma alternans. (Plate, XII, figs. 7, 7*a*.)

Temnostoma alternans Loew, Centur., v, 37.

Habitat.—Canada, Maine, New Hampshire, Connecticut, Pennsylvania Massachusetts!.

♀, ♀. Length, 12 to 15mm. Head thickly golden yellow pollinose; the vertex, a median frontal and facial stripe, and the cheeks shining black; pile of the vertex black. Antennæ reddish or yellow. Face gently concave in the middle. Thorax brownish black, a little shining; the humeri, a rounded spot at outer end of suture, and a smaller one toward the middle, a vittula running from the post-alar callus to near the suture, a triangular spot in front of the scutellum, and a large elongate spot on the meso-pleuræ, bright yellow, the color due to pollen, which in re-

s not infrequently is greyish, or even obsolete. A square spot
ıer side of the humeri deep opaque black; in the middle of the
ı front, a broad, faintly grayish, pollinose stripe. Scutellum
t its base, broadly metallic shining green on its border; pile
Abdomen oval, golden yellow and black, opaque; first seg-
ck; second segment black with two yellow cross-bands, con-
ı the lateral margins, the first narrowly, the second very
nterrupted; third segment with a median black cross-band,
the middle diamond-shaped, sometimes cut off from an oval
he sides, the first band interrupted by a linear space; fourth
segments with three small black spots each, the middle one
ı the fourth segment sometimes coalescent; margins of the
narrowly black. Legs reddish yellow; front tibiæ (except
and their tarsi deep black; front femora at their base, and
s the other pairs below near the base, more or less black.
ownish in front, nearly hyaline behind, the third vein beyond
vein broadly hyaline along its sides.
pecimens. One specimen from Pennsylvania (Keen) has the
w cross-band of the abdomen more broadly interrupted than
d, the yellow each side not reaching a third of the way across;
of all the femora are also more blackish.

ma venustum, n. sp.

ostoma excentrica Osten Sacken, Harris' Ins. Inj. to Vegetation, 3d. ed., p.
; Cat. Dipt., p. 253, note (female).

.—Massachusetts, Lake Superior (U. S.), New Hampshire.
ıgth, 15^{mm}. Very closely allied to *T. æquale*, but differs in
vo yellow spots on the suture (like *T. alternans*) on each side.
of the scutellum is black, the second abdominal segment lacks
ior cross-band, and the hind one is confined to the sides, the
argins of the segment also being narrowly yellow; both cross-
the third segment are narrow, the anterior one of the fourth
also. The remaining ones are broader, and the black is inter-
ı the middle of the fourth and fifth. In my single specimen
ind femora are brown, the front one black, except the tip.
ecimen, White Mountains, New Hampshire (S. Henshaw).

ma æquale.

ostoma æqualis Loew, Centur., v, 36.

.—British North America (Lw.), New England, Colorado!
14^{mm}. Head yellowish-white pollinose, vertex, median frontal
l stripe and cheeks shining black, vertical triangle black, be-
ıose. Antennæ reddish or brownish. Thorax black, but little
in front in the middle a little grayish; humeri, the sutures,
r vittula, and an elongate spot on meso-pleura, yellowish gray.
ı metallic shining, its base narrowly opaque; pile yellowish.
ı black, moderately shining, the segments, except the first,

each with two yellowish white cross-bands; on the second segment, the first is broad, nearly entire, the second narrow, sometimes confined to the sides of the hind border; third segment with both entire, the hind one the narrower; fourth and fifth segments similar, both of nearly equal width and connected in the middle; hypopygium pitchy. Front legs black, the knees luteous, sometimes the outer part of femora also; middle and hind femora usually blackish, except the ends, sometimes only brownish on the base; middle and hind tibiæ and tarsi reddish yellow, the last joint of tarsi darker. Wings brownish in front, hyaline behind.

Ten specimens, Dr. Dimmock (July 25, White Mountains), E. Burgess, Professor Riley (Vetà Pass, Colo.).

MILESIA.

Milesia Latreille, Hist. Nat. Crust. Ins., xiv, 361 (1804), Fabricius.
Sphixea Rondani, Dipt. Ital. Prodr., ii, 185.

Very large, robust, nearly naked species, black or yellowish brown, with yellow thoracic and abdominal markings. Head hemispherical, broader than thorax. Antennæ not long, porrect, inserted on a projection of the front, third joint rounded; arista bare. Face concave in profile, shorter than the front, moderately projecting below. Eyes bare, contiguous in the male. Thorax large and robust, with yellow markings; scutellum in large part yellow. Abdomen more than twice as long as thorax, only a little broader in the middle, flattened, with yellow bands. Legs strong, hind femora elongate, below near outer end with a tooth-like projection. Wings comparatively narrow, marginal cell closed, third vein somewhat bent into first posterior cell; anterior cross-vein beyond the middle of the discal cell, very oblique, the sixth vein beyond the anal cell bent S-like. Type, *M. crabroniformis* Fab., Europe.

The genus *Milesia*, as employed by Latreille, included a large number of heterogeneous forms. St. Fargeau and Serville, in 1825, restricted the genus to include only our present species of *Milesia* and *Spilomyia*, in the sense here used; for the species with unarmed femora and open marginal cell they proposed the name *Temnostoma*. In 1803, a year before the origin of *Milesia*, Meigen had proposed *Spilomyia*, based upon species with armed hind femora and open marginal cell. In 1838, however, he rejected both *Spilomyia* and *Temnostoma*, and included all their species, together with the species with closed marginal cell and toothed femora, under *Milesia*.

Later, Rondani, overlooking the name proposed by Meigen, based *Milesia* upon the very species to which *Spilomyia* had been previously given species with the closed marginal cell he called *Sphixea*. dies previously separated by St. Fargeau and Serville gave the name *Calliprobola*. It may be a question

ith some whether or not such a division of the heterogeneous genus f Latreille's should not be accepted. But I agree fully with Schiner, ho protests against the use of a new name when an older one stands erfectly at our disposal. It is true that none of the species now included in the genus *Milesia* were known to Latreille at the time his enus was named. Fabricius, a year later, changed the name of *Syrphus rabroniformis* Fab. (Entom. Syst., iv, 299) to *Milesia*, and the name as adopted by Latreille in his later work (Gen. Crust., iv, 332). According to the strict canons of modern nomenclature a genus cannot be ased upon a species unknown to its author at the time of its erection, ut *Milesia* of Latreille can hardly be said to have had any type, and f the name is retained at all it should be given to those species that ere first restricted by any author. This was done by St. Fargeau and erville, they restricting it to four species, two of which had been previously included under *Spilomyia* by Meigen. It seems quite useless nd very confusing to retain the name of *Sphixea*, as is done by Bigot.

"Southeastern Asia, and especially the East Indian Archipelago, eems to be the real home of this handsome genus. Thirteen species rom the Archipelago have already been described. To these I now add hree from the Philippine Islands. One more is known from Japan. rom the other parts of the world I know of only two European species, nd one North American; a second North American species may be erely a variety. Whether there are some true *Milesiæ* among the outh American species referred by authors to that genus I am unable o tell. By all means there are not many." Osten Sacken, Diptera rom the Philippine Islands, Berl. Ent. Zeitschr., xxvi, 121.

Milesia ornata. (Plate XII, figs. 2, 2*a*, 2*b*, 2*c*.)

Musca virginiensis Drury, Illustr. Exot. Entom., Appendix II; tab. xxxvii, f. 6, 1773.

Milesia ornata Fabricius, System. Antl., 188, 5, 1805; Wiedemann, Aus. Zw., ii, 106, 4; Macquart, Dipt. Exot., ii, 2, 81, 4; tab. 15, f. 4.

Syrphus trifasciatus Haasmann, Ent. Bemerk., ii, 67, 10; 1799.

Milesia limbipennis Macquart, Dipt. Exot., 4°; Suppl., 147, 8; tab. xiv, f. 3.

Milesia virginiensis Westwood, Drury's Exot. Entom., 2d ed., vol. ii, 77, 1837.

Sphyxea fulvifrons Bigot, Annales Soc. Ent. Fr., 1884, 341.

Habitat.—New England, Illinois, Maryland!, Florida, Texas, Kansas, Guadeloupe (Macq.).

♂, ♀. Length, 18 to 21^{mm}. Face light yellow, thickly covered with similar pollen and pile, shining in the middle, gently concave; cheeks narrow, shining in front, near the orbits with a black spot; antennæ situated below the middle of the head in profile. Frontal triangle in male like the face, vertical triangle black, yellow before the ocelli, long, acute, the eyes contiguous for a short distance near the middle of the tween vertex and base of antennæ. Front in female convergent vertex, yellow, with a black stripe reaching from vertex to Antennæ light ferruginous. Eyes bare, occiput

black, yellow near the mouth, posterior orbits broadly yellow pollinose. Thorax black, but little shining, with a slight greenish reflection, with three broad yellow fasciæ, the first broad, extending across on the anterior margin, sharply interrupted in the middle, the inner hind angles sometimes extending back quite to the next fascia, second band extending across from in front of the root of the wings, interrupted like the preceding; third band on the posterior margin, in front of the scutellum, uninterrupted; scutellum black, broadly yellow on its margin. Pleuræ yellow on the anterior border from the humeri to the base of the anterior coxæ, meso-pleuræ with a vertical and sterno-pleuræ with an oval, nearly contiguous, spot. Abdomen: First segment black; second segment with a broad yellow cross-band, narrowly interrupted and narrowly separated from a reddish-yellow, shining, entire cross-band, which is sinuate on its anterior border, with an angular projection in the middle; third and fourth segments similar; in the third the hind cross-band is broadest in the middle, narrowed at the sides; in the fourth the posterior cross-band forms the larger part of the segment, dilated in front at the middle more sharply than in the preceding; narrow margins of all the segments, except the posterior border of the fourth, black; pile chiefly orange colored, lighter on the yellow bands. Legs yellow, with yellow pile; tarsi and outer part of hind femora more reddish, and the pile intermixed with black. Wings nearly hyaline, especially in the first basal cell, somewhat yellowish or brownish in front, and slightly clouded near the tip.

Eight specimens (Dr. G. Dimmock, Mr. S. Henshaw, Mr. E. Keen).

M. limbipennis Macquart, as figured by Macquart, shows very great differences, in that the marginal cell is open and the third vein nearly straight. Osten Sacken, however, from an examination of the type specimen in Mr. Bigot's collection, believed it to be nothing more than a variety with dark wings. A single specimen from North Carolina (F. P. Atkinson) has the wings very dark brown, almost blackish, in front, the scutellum wholly yellow and the yellow bands of the abdomen separated only by slender black lines.

SPHECOMYIA.*

Sphecomyia Latreille, Fam. Natur. du Regne Animal, 1825; Dict. Classique d'Hist. Nat., xv, 545, 1829.

Pyrrhosia Gorski, Analec. ad Ent. prov. occid. imperii Rossici, 1852, fasc. i, p. 170.

...derately large species with light yellow markings on head, thorax, abdomen; the latter with a median and posterior band on segments ...front very short, horizontal, concave longitudinally. Eyes bare, ...d in the male by the ocellar tubercle. Antennal pro... Antennæ longer or shorter than the head. ...y tuberculate, reaching two-thirds of the

*...hex; μυια, fly.

vertical diameter of the eyes below the orbit, truncate at tip. Abdomen cylindrical. Legs simple. Wings: Marginal cell wide open, third longitudinal vein gently sinuate, small cross-vein oblique, joining the fourth longitudinal vein near outer third of discal cell, last section of fourth vein lightly curved, joining the third near the tip. Type of genus *S. vittata* Wied.

TABLE OF SPECIES.

1—Antennæ very long, the third joint very short . . . . . **vittata**
Antennæ shorter than the head, first two joints very short, the third transversely elliptical 2
2—Yellow cross-bands of abdomen very broad . . . . . **brevicornis**
Yellow abdominal cross-bands narrow . . . . . **Pattoni**

Sphecomyia vittata.

Chrysotoxum vittatum Wiedemann, Auss. Zw. Ins., ii, 87.

Psarus ornatus Wiedemann, *ibid.*, 91, 1; tab. ix, fig. 7; Macquart Hist. Nat. Dipt., i, 491.

Sphecomyia vittata Macquart, Dipt., Exot., ii, 2, 18, 1; tab. iii, fig. 3, *id.* Regne Animal, Cuv. xiv; Osten Sacken, Cat. Dipt., 254; V. v. Röder, Ent. Nachrich, 1879, 96.

Tyzenhausia vespiformis Gorski, Analecta ad Entomographium provinciarum occidentalis imperii Rossici, 1852, fasc. i, p. 170–174; tab. 1, fig. 1 (male). (V. v. Röder, l. c).

Sphecomyia vespiformis Wahlberg, Vetensk, Acad. Forhandl., 1854, p. 155; Zetterstedt, Dipt. Scand., xii, 4647; Schiner, Fauna Austr., i, 368.

Habitat.—New England, Southern States, Minnesota! Colorado, Norway, Siberia.

♂, ♀. Length, 11 to 12mm. Black and yellow varied. Front of female black, yellow on the sides below; frontal triangle shining black, except on the sides, continued over the frontal process, and as a conspicuous stripe to the oral margin. Face, light yellow, opaque; cheeks with a broad shining black stripe. Antennæ black, much longer than the head, with short black pile; first and second joints of nearly equal length, third very short, rounded on its end; posterior orbit broadly light yellow, narrower above, and with a fringe of bright yellow pile below; occiput black. Thorax black, nearly opaque, with rather sparse yellowish pile, and yellow spots as follows: a rounded one on each humerus, and two dorsal stripes, abbreviated in front and behind and broadly interrupted in the middle, forming two pairs of elongated spots; a spot on the meso-pleuræ, and one on the sterno-pleuræ, nearly confluent, forming an oval vertical stripe. Scutellum yellow, the rim narrowly black and with black pile. Abdomen shining black, with bright yellow opaque bands; first, second, third, and fourth segments with posterior entire bands; second opaque, with an arcuate band, interrupted and attenuate toward the middle, the outer ends united with the yellow of the posterior margin; third and fourth segments with bands near the middle of the segments, interrupted by a linear space or entire, and expanded at the lateral margins. Legs reddish yellow, coxæ black, the

hind ones with a yellow spot, the base of front and middle femora blackish, of the hind femora brownish (in my single female wholly reddish yellow). Wings brownish, lighter towards the posterior part; a dark narrow spot extends from near the tip of auxiliary vein to the base of third posterior cell.

Seven specimens, Connecticut, June, and one from Minnesota (Keen).

Sphecomyia brevicornis.

Sphecomyia brevicornis Osten Sacken, Western Dipt., 341.

Habitat.—Webber Lake, Sierra County, California (O. S.).

"♂. Antennæ black, about half as long as the eye from its upper to its lower corner; they are inserted on a conical, black projection of the front; joints nearly of the same length, the first cylindrical, the second subtriangular, the third rounded, somewhat brownish; arista yellowish. Face and front golden yellow, the former with a black stripe reaching from the antennæ to the mouth; cheeks black; vertex black; posterior orbits golden yellow. Thorax black; humeri, two dorsal lines, interrupted in the middle and not reaching the scutellum, a large spot on the pleuræ and a smaller one under it yellow; scutellum yellow, its posterior edge black, beset with brownish pile; halteres with yellowish knobs. Abdomen yellow; first segment black at base; the second segment has two narrow black cross-bands, the one at the base, the other about the middle; the second does not reach the lateral margins; they are connected in the middle by a black line; the third segment has a narrow black border anteriorly, a small, black, diamond-shaped spot in the middle, and two black streaks on each side between this spot and the lateral margin; the black anterior margin of the fourth segment is entirely concealed under the preceding segment, but a diamond-shaped black spot in the middle and black streaks on the sides are similar to those of the preceding segment; hypopygium yellow. Femora black, except the tip, which is yellowish; the hind femora have the latter half brownish yellow; tibiæ and tarsi brownish yellow; the last two joints of the tarsi black; the end of the third joint brown. Wings tinged with brownish, somewhat yellowish at the base and along the anterior margin; a brownish cloud on the cross-veins. Length, 11 to 12 mm."

"This species is very like the well-known *Sphecomyia vittata*, but is smaller, has the first two joints of the antennæ much shorter, and a somewhat different picture of the third and fourth abdominal segments."

Sphecomyia Pattoni. (Plate xii, fig. 8.)

Sphecomyia Pattonii Williston, Proc. Am. Phil. Soc., xx, 328.
Calliprobola calorhina Bigot, Annales Soc. Ent. Fr., 1884, 353.

Habitat.—Washington Territory!

♂, ♀. Length, 13 to 14 mm. Front a little longer and more inclined than in *S. vittata*, black in the female, with a rounded yellow spot on side, narrowly separated from the yellow of the face; frontal trian in the male black in the middle, near the eyes yellow. Eyes of mal

narrowly separated. Antennæ reddish brown or blackish, about half as long as the horizontal diameter of the eye, first two joints short, third joint transversely oval, reddish or yellowish near the base below. Face considerably concave on the upper half in the male, less so in the female, with a not very prominent convexity below; light yellow, opaque, with a broad shining black stripe reaching from antennæ to the oral margin; cheeks broadly shining black. Pile of vertex black. Posterior orbits below yellow, with yellow pile, above very narrowly whitish. Thorax shining black, with blackish pile on the dorsum and scutellum; a spot on the humeri, an oval one on the mesopleuræ, and a round one on the sternopleuræ, yellow; scutellum black, yellow at the base Abdomen black, with yellow bands and yellow pile; first, second, third, and fourth segments with rather narrow posterior margins; second segment with an arcuate band, attenuated towards the middle, broadly interrupted and separated from or narrowly connected with the yellow posterior border on the lateral margin; third and fourth segments with a median band, less broadly interrupted, expanded on the lateral margins to connect with the posterior cross-band; fifth segment in the female, with three small subcontiguous black spots; hypopygium black with yellow pollen. Front legs, except extreme tip of femora and base of tibiæ, black, the tarsi somewhat thickened; middle and hind legs yellowish red, blackish toward the base of femora, and the last two joints of the tarsi black. Wings a little brownish, especially along the veins, a brownish cloud at the origin of the third vein and the outer end of the second basal cell.

Two specimens.

CERIA.*

Ceria Fabricius, Ent. Syst., 277, 1794.
Sphixmorpha Rondani, Ann. Soc. Ent. de France, ii, 8, 213.

Of medium to large size species, slender, nearly bare, black or dark ferruginous, with yellow bands and spots. Head somewhat flattened, a little broader than the thorax. Antennæ usually inserted upon a long slender process, but the process sometimes short, or even wholly wanting. Antennæ much longer than the head, porrect; first joint long, slender; second and third joints somewhat shorter, of nearly equal length, together forming an elongate oval mass, with a short pointed terminal style. Face below the antennæ not, or only slightly, excavated in profile, vertical, much produced below the eyes, in outline obtuse. Eyes bare, contiguous in the male; vertex angular, projecting. Thorax rather long quadrangular, with yellow spots; scutellum semicircular, wholly, or in part, yellow. Abdomen elongated, cylindrical, more or less narrowed at the base, with yellow bands. Legs moderately strong, hind femora somewhat elongated, tibiæ somewhat thickened toward the end.

* *Κηρια*, a girth.

Marginal cell of the wings open, third longitudinal vein angulated and with a stump of a vein projecting into the first posterior cell; anterior cross-vein beyond the middle of the discal cell, oblique. Tegulæ large. Type of genus, *C. conopsoideus* Linné.

TABLE OF SPECIES.

1.—Antennal process of front not more than half as long as the first joint of antennæ; third longitudinal vein angulated, but scarcely bent into the first posterior cell 2

Antennal process slender, longer than first joint of antennæ; third vein bent deeply into first posterior cell 3

2.—Antennal process almost wholly wanting, first joint of antennæ very slender, nearly as long as the two following together; face vertical, not at all excavated in profile; second segment of the abdomen much constricted, third and fourth segments each with two arcuated spots . . . . . **signifera**

Antennal process about one-half as long as first joint of antennæ, the latter slender, about three-fourths as long as last two together; abdomen without the side spots on third and fourth segments, the second segment less constricted; wings similar to preceding; the general color more ferruginous . **Loewii**

3.—Second, third, and fourth segments of abdomen each with two yellow spots, in addition to the bands of the hind margins . . . . . **pictula**

Second, third, and fourth segments without such spots 4

4.—Second segment of abdomen much shorter than the third . . . . **abbreviata**

Second segment of abdomen nearly as long as the third . . . . . **tridens**

Ceria Loewii, n. sp.

Habitat.—Arizona!

♂. Length, 16mm. Face sulphur yellow; from the antennal protuberance a moderately broad ferruginous stripe, white dusted along the middle, where it is the broadest, runs to the oral margin. Cheeks broadly dark ferruginous. From the base of the antennal process a small, indistinct projection, on each side, is directed outwards and downwards. Antennal process short, but little more than one-half as long as the first joint of the antennæ; the latter slender, about three-fourths as long as the two following together; second joint a little shorter than the third, style slender; the color is dark ferruginous. Vertex reddish yellow. Dorsum of thorax brownish black; red on the sides and on the meso and ptero pleuræ; humeri and scutellum yellow. Abdomen: first segment, reddish brown; second segment, rather slender, somewhat longer than the third, with a spot on each side, nearly contiguous, and narrow posterior margin, yellow, elsewhere reddish-brownish black; third and fourth with broader yellow hind margins. Legs reddish yellow. Wings brown on the anterior portion; third longitudinal vein slightly angulated and with a stump of a vein; first posterior cell closed in the border of wing.

Two specimens (H. K. Morrison). This fine, large species I dedicate to the memory of Dr. Loew, to whom the science of American dipterology owes so much.

ɔw, Centur., v, 48; x, 57, note.

;land, Virginia, Florida!

to 11mm. Black. Face light yellow with a me-
te narrow in the male, broader in the female, run-
nal process to the oral margin; cheeks broadly
ıtal triangle in male yellow, narrowly divided by
and separated from the yellow of the face by a
from the base of the antennal process to the eyes.
ach other very slightly. Front in female black,
led spots, two of which are just above the base of
ometimes obsolete), and one on each side near the
ɛess slender, nearly as long as the first two joints
ıer, yellowish towards the base, more brownish on
antennal joint but little longer than the second,
, blackish on distal half; second joint black, yel-
oint black, scarcely longer than the second; style
yellow, swollen, occiput and orbits on the sides
.; humeri, a small spot on side of dorsum, some-
ı the root of wings, a large vertical meso-pleural,
contiguous sterno-pleural spot, and narrow border

Abdomen black; third segment nearly equal in
o; first segment on the sides broadly, second seg-
ısterior band; third and fourth with narrow poste-
Legs in male chiefly black; base and tip of front
ical third of middle and hind femora, middle tibiæ
nt and hind tibiæ, and tarsi except the terminal
; in the female the legs are chiefly reddish, the
ıf tibiæ, and tip of tarsi, more or less brownish.
terior half, nearly hyaline behind, the costal cell.
e spurious vein to the small cross-vein and then
border of the third vein to its tip. Third vein
ıd with a stump of a vein.

New Haven, Conn., and one from Virginia (Mr.

Neue Beiträge, etc., i, 17.

ı States (Loew).

¹. Head as in *abbreviata;* the thorax may show
w spot on the suture; the abdomen, in addition to
nargins, has on the second, third, and fourth seg-
r spots; the second segment is longer as in *tridens;*
ır, or somewhat darker.

s has not been recognized since its description in
n by Loew is as follows: "Ganz von Körperbau
l vespiformis, doch noch kleiner als letztes

Auch in der Farbeneinvertheilung ähnelt sie diesen Arten, namentlich der *Ceria conopsoides*, nur dass sie auf dem Thorax und Hinterleibe gelbe Flecken hat, welche jener fehlen. Die Färbung des Kopfs wie bei *C. conopsoides*. Auf dem Thorax findet sich auf der Naht noch zwei gelbe Flecke, welche *C. conopsoides* fehlen; die Spur von zwei andern gelben Flecken findet sich an der Mitte des Vorderrandes. Der Hinterleib hat vom 2ten Ringe an ausser dem gelben Hinterrandssaume je zwei gelbe Flecken. Färbung der Beine noch etwas dunkler, als sie sich gewöhnlich bei *C. conopsoides* findet. Flügelgeäder wie bei *C. conopsoides* und *vespiformis;* die Färbung derselben überall dunkler als bei diesen Arten."

Ceria signifera.

Ceria signifera Loew, Neue Beitr., i, 18.

Habitat.—Mexico (Lw.), Texas, Florida!

♂. Length, 14mm. Face perpendicular, not at all excavated in outline, yellow with a large yellow sagittate spot in the middle extending narrowly to the oral margin and more narrowly above to the black that surrounds the antennæ, the base of which is yellow, in its middle with a narrow yellow stripe or spot; on either side of the base of the antennæ the black extends out narrowly to the orbit; frontal triangle yellow along the eyes and separated from the yellow of the face by the lateral black projections; cheeks broadly black, with a yellow stripe reaching from the orbit. Frontal process almost wholly obsolete; the immediate ground upon which the antennæ are inserted is yellow; first joint long and slender, a little shorter than the following two together, brownish yellow, darker toward the end, second joint shorter than the third, black, reddish at the tip, third joint black. Occiput black, the orbit dusted with white on the sides, vertex wholly yellow, extending broadly outwards. Thorax black; humeri, a spot on the sides at base of suture, a distinct lateral supra-alar vittula, an elongate meso pleural, and a sterno-pleural spot immediately below, and nearly all the scutellum, yellow. Abdomen much contracted at base of second segment, black; second, third, and fourth segments with equal yellow fasciæ on the posterior margins; second segment yellow on the sides at the base, with an oval reddish spot on the sides above, toward the base; second segment near the base with an interrupted fascia; third and fourth segments with a U-shaped spot on each side, the convexity behind. Legs wholly yellow. Wings brown in front, more yellowish toward the base; third vein only a little angulated, not bent into the first posterior cell.

♀. Front black, at the base of the antennæ, a spot on each side of the base of the antennæ near the eye, an arcuated transverse, abbreviated band above the base, and the vertex, yellow.

One male specimen from Professor Riley's collection (Florida), and three females in the Loew type collection from Texas (Boll), bearing the label "signifera?" in Loew's writing. I find discrepancies in the original description which make me doubt that this determination is the correct one.

Ceria tridens.

Ceria tridens Loew, Centur., x, 57.

Habitat.—California, Washington Territory!

♂, ♀. Length, 11 to 12mm. Closely related to *abbreviata*; black, subopaque; face yellow, with a median black stripe, sometimes quite broadly oval, at other times narrow, extending from the base of the antennal process to the mouth; on either side of the base of the antennal process and connected with the facial stripe an oblique stripe runs outward towards the orbit, sometimes reaching it in an attenuated point; cheeks broadly black, sometimes with a slender yellow line; frontal triangle yellow along the border of the eyes, separated in the middle by black; in the female the yellow may extend across the front, just above the antennal process, elsewhere black, the vertex with a yellow oval spot on each side in both sexes, touching the corner of the eye. Antennæ black, joints of nearly equal length; process elongate, about as long as last two joints together; reddish toward the base. Thorax black; humeri, a spot near the outer end of suture, usually a vittula above root of wings, a large oval spot on the meso-pleuræ, a smaller one on the sterno-pleuræ, and a still smaller one on the ptero-pleuræ, all nearly contiguous, and the scutellum in large part, yellow. Abdomen cylindrical, black, finely scrobiculate, the sides of the first segment and the posterior borders of the remainder yellow, the second and third of nearly equal width, broader on the sides, the fourth very broad in the middle, attenuate on the sides, and sometimes with a conspicuous lunate spot on each side of yellowish pollen, hypopygium wholly black. Legs, male: Front and middle femora black, except the base and tip; hind femora black on outer half; all the tibiæ with a brownish ring before tip; intermediate joints of all the tarsi brown, last two of hind tarsi black; legs elsewhere yellow. Female: Yellow, the front femora with a dorsal black streak, the tarsi more ochraceous. Wings brown in front, hyaline behind.

Four specimens. The third abdominal segment in this species is scarcely longer than the second.

Ceria nigripennis, n. sp.

Habitat.—Mexico!

♀. Length, 15 to 16mm. Deep black. Face with two large elongate triangular yellow spots with the apex below; on either side of the base of the antennal process near the eye a small yellowish spot. Antennal process a little longer than the first joint of the antennæ. Humeri, the scutellum wholly, a large spot on the meso-pleuræ, a smaller one behind it and nearly contiguous, and a spot on each side of the metanotum, light yellow. Abdomen only lightly constricted at base of second segment; a spot on each side of the base of second segment, the posterior margin of the same segment narrowly, and of the third segment still more narrowly yellow. Legs wholly black. Wings deep blackish

brown, a large triangular space on the outer posterior part, nearly hyaline.

One specimen, in the Osten Sacken collection at Cambridge.

Ceria superba, n. sp.

Habitat.—Mexico!

♂. Length, 19mm. Red. Face red, with four rather narrow, not conspicuous yellow stripes running to the oral margin; on the lower part sub-tuberculate; on each side of the base of the antennal process with a small black spot. Antennal process slender, as long as the two outer joints of the antennæ together. Vertex only moderately swollen. Dorsum of thorax deep red; in front near the middle with the beginning of two yellowish dusted stripes; the humeri, a spot at outer end of the suture, two small spots in front of the scutellum, and a slender supra-alar vittula, yellow; contiguous with each supra-alar vittula on the inner side there is a black abbreviated stripe; scutellum yellow, across the disk slenderly black; an elongated yellow meso-pleural spot bordered with blackish, a spot above the middle coxæ, and a large one on each side of the mesonotum likewise yellow. Abdomen red, brownish toward the end, much constricted at base of second segment; base of second segment and its posterior margin yellow. Legs red; the hind femora blackish above at base. Wings hyaline, reddish along the front margin.

One specimen in the Osten Sacken collection at Cambridge.

Ceria pedicellata, n. sp.

Habitat.—Mexico!

♂. Length, 12mm. Antennal peduncle short, not a third the length of the first joint. Black; antennæ reddish-black, the larger part of the first joint red; first joint very slender, a little longer than the following joint, the third joint about half the length of the second. Face lightly pollinose in the middle and on the sides; vertex, frontal orbits, a small orbital spot on the upper part of the face, and a pair of facial stripes, convergent and narrower below, yellow. Dorsum of thorax scrobiculate; humeri, a small spot on outer end of suture and narrow base and margin of scutellum, yellow; pleuræ wholly black. Abdomen black; base of second segment on the sides, and posterior margin, and the posterior margins of the two following segments more narrowly yellow; fourth segment with a pair of pollinose arcuate lines; second segment slender, cylindrical, and elongate. Legs reddish-brown, the hind femora, except the base, black, and the front legs more blackish; base of all the tibiæ yellow; hind and middle tarsi brownish-red. Wings brown in front, subhyaline behind.

One specimen (National Museum, Professor Rileys' collection), Isthmus of Tehuantepec (Sumichrast). Is closed allied, apparently, to *C. arietina*, but differs in the face and pleuræ.

Ceria scutellata, n. sp.

Habitat.—Mexico!

♀. Length, 9 to 10^{mm}. Dark reddish black. Peduncle of antennæ short, scarcely a third the length of the first joint; second joint not much longer than the third. Antennæ and peduncle brownish red. Vertex, small orbital spots nearly opposite base of antennæ, and on the sides of the face, a pair of stripes beginning a little below the base of the antennæ and somewhat converging to the oral margin, and two on the cheeks, yellow. Dorsum of thorax black; a small spot on the humeri, a smaller one on the outer end of suture, a slender intra-alar vittula, reaching nearly to the suture, a large trapezoidal spot in front of the scutellum, and the scutellum wholly, yellow. Pleuræ dark red, a median vertical vittula, and a spot on sides of metanotum, yellow. Base of second segment of the abdomen, and its posterior margin, and that of the next segment, yellow; second segment very narrow near the base, but broad behind. Legs dark brownish red. Wings brown in front, nearly hyaline behind.

One specimen, Isthmus of Tehuantepec (National Museum, Professor Riley's collection).

ADDITIONAL NORTH AMERICAN SPECIES.

Ceria nigra.—Mexico.

Sphyximorpha nigra Bigot, Annales Soc. Ent. de Fr., 1883, 317.

Ceria rufibasis.—Mexico.

Sphyximorpha rufibasis Bigot, ibid., 318.

Ceria arietis Loew, Neue Beitr., i, 17.—Mexico.

Ceria Daphnæus Walker, List, etc., iii, 537; Westwood, Trans. Ent. Soc., v, 231, pl. xxxiii, fig. 7; Loew, Neue Beitr., i, 18.—Jamaica.

Ceria cacica Walker, Trans. Ent. Soc. N. S., v, 287.—Mexico.

Ceria tricolor Loew, Wien. Ent. Monatschr., v, 37.—Cuba.

PART III.

CONCLUSION.

PART III.—CONCLUSION.

HABITS OF THE SYRPHIDÆ.

In their adult habits the *Syrphidæ* all show a great uniformity. They are flower-flies, and feed upon honey and pollen. They are observed on blossoms of sweet-smelling, melliferous plants, such as the hymenoptera prefer; and patches in bloom of blackberry (*Rubus*), wild cherry (*Prunus*), dogwood (*Cornus*), Canada thistle (*Cirsum*), and elderberry will always be sure to reward the patience of the collector. Some species, as those of *Syritta*, *Sphærophoria*, *Mesograpta*, etc., will be seen wherever there are blossoms. Species of the last, especially, are very abundant about corn-fields when the plants are in blossom, and will frequently alight upon one's hands; these "sweat-flies" are feared by not a few persons, under the belief that they will "sting." All are sunshine-loving, and will rarely be found except in the middle of bright unclouded days. To collect most of the *Syrphini*, *Eristalini*, and following species, one should seek some patch of honey-bearing flowers, such as I have indicated, and patiently stand and watch for their appearance, moving only slowly about. The *Chilosini* will mostly be caught in beating, or in sunshiny, meadowy spots in the woods. Some species, as those of *Xylota*, are found among the foliage of bushes in blossom, and here and there appearing in sight, resting upon some leaf. Species of *Chrysogaster* will be found on flowers in damp places, and are easily captured, their flight being slow. Species of *Neoascia* will be readily overlooked unless especial attention is devoted to them. They live among low bushes and are not usually taken from flowers. Species of *Sphegina*, on the other hand, are found about flowers, especially in elevated regions. Specimens of *Baccha* will rarely be taken when at rest; like most of the slender species they are constantly on the wing, and only now and then rest very lightly upon some sunny leaf or blossom. Owing to their wide distribution a considerable number of species in any one locality will reward long-continued collecting. In a few days, in the first week in August, I obtained forty-seven near the base of Mount Washington, the majority of them from a single patch of elderberry blossoms not a rod in diameter, near the edge of the forest. The bright yellow markings of many lose their freshness after death, and the specimens should never be allowed to be moistened or wetted. The

most convenient collecting-bottle that I have used, consists of a plain, wide-mouthed, small bottle, lined throughout with blotting-paper, in the firm cork of which a small cavity is filled with blotting-paper wetted with a solution of cyanide of potash. For a collecting-net I would recommend coarse bobbinet lace, attached to a light wire ring eleven inches in diameter, with a light, rather short handle.

LARVÆ.

The earlier stages and metamorphoses of many of the European species of Syrphidæ are known, and very similar habits and structural peculiarities may be expected from the American species when they shall have been more studied in the larval and pupal conditions. Very few species hitherto have been observed in the United States, and they offer no novelties in the general known habits of the family. The larvæ live usually upon vegetable substances, though some are partly or wholly parasitic upon other insects, especially the Aphidæ, which they serve largely to keep in check. Some are aquatic, living in mud, outhouses, vegetable mold, breathing through the elongate stigmatic tube at the hind end of the body, which they protrude from the substances, when very moist, in which they live. Other species live under bark, on leaves, in the nests of bees, ants, etc.

The larvæ are usually not very elongate, with firm, sometimes tough skin, the head segments small and extensile. Like the other families of the Cyclorrhapha, the larvæ of Syrphidæ do not have a distinctly differentiated head. The external mouth-parts are either wholly wanting, with only a soft fleshy opening, or there are two or four outwardly directed hooklets. There are also short, small, one or two jointed fleshy antennæ. The body is smooth, or provided with soft, conical projections and bristles; below usually with seven pairs of abdominal feet. At the posterior end, the body terminates in a more or less elongate tube, single or double—the stigmata. This sometimes forms a short, almost chitinized, tubercular projection on the dorsal part of the last segment; at other times it is very long, longer than the body, slender, composed of two joints, the one sliding within the other, like the joints of a telescope. It is never divaricate, or forked at the tip, as in many of the other tailed larvæ in the allied families. In changing to the pupal condition the larval skin contracts, as in all of the Cyclorrhapha, to form the pupal envelope, and the body becomes shorter, more oval, and of a darker color, the elongated respiratory type, in the "rat-tailed" species, being curved over the back. At the expiration of the pupal period the anterior end of this envelope is pushed off by the inclosed insect and the perfect fly escapes, soft and moist, but in a very short time in the sunlight to acquire strength and firmness. Unlike all the other Cyclorrhapha, except the Pipunculidæ, however, the frontal lunule in this family does not subserve the usual purpose of springing off this trap or lid to the larva's prison, for it is fused with the front and not inflatable.

This function is that of the inflatable face, and hence it is, this part of the Syrphid anatomy is one of the very best for the furnishing of structural characters in the adult fly.

So far, the larvæ have furnished evidence of only two principal groups in the family. In the one (*Eristalinæ*) the larvæ have no mouth-hooklets, and in general only rudimentary mouth-parts (*Eristalis*, *Mallota*, *Volucella*, *Helophilus*, *Pocota*, *Xylota*, *Orthoneura*); in the other the larvæ are provided with well developed mouth-hooklets (*Syrphus*, *Chilosia*, *Doros*, *Baccha*, *Merodon*, and others). This division coincides fairly well with that based upon adult characters, but a classification drawn from the earlier characters can rarely supersede that founded upon the mature ones, though it may materially modify it. Certainly *Orthoneura* cannot be placed among the *Eristalinæ*, or *Merodon* among the *Syrphinæ* without doing violence to most important and real relationships. Brauer thinks that the larvæ, when they are more studied, will furnish more natural groups in the Syrphidæ, but I do not agree with him, at least to any more than a limited extent. The perfect insect is the most complex, and must offer a greater number and more diverse characters than the simpler stages can present. The use which larval characters subserve the individual or species must first be ascertained before we can learn their true value. It is not at all probable that the possession of mouth-hooklets can materially modify the life-habits of a species when they are present or absent in such related forms as *Chilosia* and *Orthoneura*. To insist upon a classification based upon such characters, would be like insisting upon an equal valuation for the presence or absence of palpi, ocelli, etc. The presence or absence of mouth-hooklets cannot be used to divide the family into principal groups.

The principal genera in which the larval habits are known are the following:

Baccha, *Syrphus*, *Sphærophoria*, *Pipiza*, *Paragus*. Larvæ aphidophagous.

Mallota, *Spilomyia*, *Xylota*, *Brachypalpus*, *Pocota*, *Myiolepta*, *Chrysotoxum*, etc. Larvæ in decaying wood or trees; some of them (*Mallota*) long, "rat-tailed."

Chilosia. Larvæ living in the stems of *Cardium*, *Sonchus*, *Schrophularia*, *Matricaria*, and in fungi (*Boletus edulis*, etc.).

Platychirus, *Rhingia*, *Eristalis*, *Syritta*, *Orthoneura*. Larvæ in decaying vegetable matter, manure, or in soft mud impregnated with decaying vegetable matter.

Brachyopa, *Xylota*, *Chrysochlamys*, *Ceria*. Larvæ found living in flowing sap of trees.

Crioprora. Bred by Osten Sacken, from larvæ found under oak bark.

Microdon. Larvæ common in ants' nests. The larvæ and pupæ of this genus are very curious creatures, resembling some land-shells so much that twice they have been described and named as species of mollusks.

Volucella. The larvæ are parasitic upon humblebees, living in their nests. The very great resemblance of the adult of some species to the bees makes this fact the more interesting.

STRUCTURAL CHARACTERS.

Structural characters in the Syrphidæ are derived from all parts of the body, though those from the thorax are unimportant. The most useful are found in the wing, but a much larger number exist in the head, and are, intrinsically, scarcely less valuable. Next in importance come the various ornamental and functional characters of the legs; while the abdominal ones are superior only to those of the thorax. The following remarks, it will be understood, are based chiefly upon my autoptic knowledge, and such reliable observations and descriptions by other authors as have been accessible to me; they may, in some cases, require modification to express the requirements of exotic genera.

Most excellent structural characters are presented by the antennæ. With proper caution, they are often serviceable in generic distribution, though by far the greater number will only permit of specific employment; some minor variations are sexual, or even individual. Formerly much greater reliance was placed upon the structure of these organs, for generic distinguishment, than our present knowledge will confirm. The basal joint is seldom elongate, and when so, the elongation is rarely pronounced. It may be seen in *Microdon*, *Chrysogaster*, *Criorhina*, *Merapioidus*, *Spilomyia*, *Ceria*, etc., and has only subordinate value, otherwise related species differing materially in this respect. The second joint is more rarely lengthened, extraordinarily in *Sphecomyia*, moderately in species of *Chrysogaster*, *Pipizella*, *Lepromyia*, *Chrysotoxum*, *Microdon*, and *Ceria*. The third joint offers the greatest diversity in form, and the most useful differential antennal characters. In the *Melanostomini*, *Syrphini*, *Spheginini*, and *Brachyopini* it may be oval, but in none of our genera is it distinctly elongate or noticeably widened. In the *Eristalini*, *Sericomyini*, and *Xylotini* it is predominantly dilated, rarely longitudinally oval, never at all elongate. In the *Microdonini* and *Volucellini* it is lengthened; I know of no exception, though in some species of the latter, as *V. obesa*, the elongation is only slight; yet even here the joint is not oval, but pointed. Among the *Chilosini* we find the greatest variableness; in *Pipiza*, *Paragus*, and *Lepromyia*, more or less slender; in *Chrysogaster*, with intermediate forms between marked elongation and orbicular; in the other genera, oval, orbicular, or subquadrate. In the *Milesini* it is always short; in *Sphecomyia*, sp., pointed; in the other genera, transverse. So far as my knowledge reaches, species with elongated antennæ are not very active in their habits, and frequently have pilose eyes.

There seems to be a definite relation existing between the neuration and elongation of the antennæ. Wherever the last section of the fourth vein and the posterior cross-vein show a tendency to a rectangu

n, or the inflection of the anterior end, a like tendency toward an-
al elongation is usually apparent. Examples of this will be seen
icrodon, *Psarus*, *Paragus*, *Pipiza*, *Leprodomyia*, *Chrysogaster*, *Volu-*
etc. The converse, however, is not true.

derate or slight plumosity of the arista is of little value in generic
bution. It is disregarded in *Chilosia*, the *Brachyopini*, and *Eris-*
Abundant plumosity, on the other hand, is of excellent value in
Volucellini and *Sericomyini*. In all the other American genera the
is bare, but among the European genera plumosity also occurs in
us, *Doros*, and *Spatigaster*. In situation, the arista departs markedly
its usual basal position only in *Pelecocera*, *Nausigaster*, and *Mera-*
us. In some of the long-antennæd *Chilosini* it is more median than

e front frequently affords excellent characters, both generic and
fic, in its length, breadth, convexity, wrinkles, grooves, etc. The
ion and size of the ocelli, in species of *Pyrophæna*, *Sphærophoria*,
Mesograpta, are of specific value; otherwise their structure and
ion are nearly uniform. The projection of the frontal process is
mely great in species of *Ceria*. In the *Xylotini* and *Milesini* it is
is usually more noticeable than in the remaining groups, and is
er in the male than in the female; its value is only comparative.

like all the other Diptera cyclorrhapha (except the Pipunculidæ),
upra-antennal lunula is fused with the front, and is not inflatable
e process of extrication from the larval envelope. The face sub-
s this purpose, and it is here that we find the greatest diversity of
ture. With the exception of *Syrphus*, *Eristalis*, and some others,
pecies in most cases can be distinguished with more or less cer-
y by the facial profile. The projection of the epistoma finds its
est development in *Rhingia*, and only a little less in *Crioprora*,
hina, species of *Volucella*, etc. In most genera there is a more or
pronounced convexity near the middle, or a little below, but is
times obsolete or wanting where the epistoma strongly projects or
eding. The face is apt to differ in shape in the two sexes; usually
ss convexity or tubercularity is in the female. This will be more
ially observed in species of *Chrysogaster* and *Chilosia*, *Myiolepta*,
llastes, and the more *Milesia*-like forms.

e eyes differ in size and shape very appreciably in different genera,
haracters drawn from them are expressed with difficulty, except
e aid of figures. Their hairiness or pilosity is of greater, though
s doubtfully generic, value; it may separate species closely allied,
rphus ribesii and *S. torvus*, and species of *Didea*. The following
more or less ocular pilosity: *Microdon* spp., *Chrysotoxum*, *Psilota*,
a, *Paragus*, *Chilosia* spp., *Leucozona*, *Catabomba*, *Eristalis* usually,
cella usually, *Copestylum*, *Mallota*, sp. *Doliosyrphus*, and *Chrysochla-*
It will be noticed that most of the species with an exterior oblique
-vein have bare eyes. Does their pilosity bear any relation to the

habits? Certainly some of the pilose-eyed forms are the less active of the family.

The scutellum presents few structural characters. In *Chrysogaster*, *Pipiza*, and *Chilosia* its thinness may be of generic value. In *Chalcomyia* and *Solenaspis* O. S., its size and width are peculiar. Strangely, both these genera, though widely separated, must present a singular resemblance. In *Microdon* the shape and spines are characteristic. In all the other genera the scutellum is usually hemispherically convex, and but little variable.

In the wing numerous characters appear, in nearly all parts. The shape and termination of the second longitudinal vein, the curvature of the third, the position and shape of the cross-veins, the shape of the sixth longitudinal vein in the Eristaloid genera, and the termination in the Milesoid forms, all form the basis of our classification. In the Syrphoid neuration the veins are usually weak, the wings light and thin; such are mostly adapted to ærial flight and soaring. In the species with inflected veins and more or less elongated antennæ we find the venation usually stouter and the wing heavier, the posterior part unsupported; such species are more sluggish and less active in flight. Finally, speed and strength are united in the *Eristalini*, *Xylotini*, and *Milesini*. The wings here have moderately strong veins, with the outer and posterior portions stronger. *Syritta* differs most in the position of the cross-vein, and its habits are more nearly like the Syrphoid species.

In the abdomen the shape, flattening and elongation offer the greatest diversity, and afford both generic and specific characters, but the former are not easily limited. Some of the smaller, more slender, species are noted for their quick flight, as *Allograpta*, *Sphœrophoria*, *Mesograpta*, *Syritta*, etc. Those with a short, thick-set abdomen will usually be found resting upon flowers, and never soaring; those with an oval depressed abdomen, as in *Syrphus*, are the most delicate in their structure, and at the same time very quick and active in flight. The extremes of shape are found in *Baccha*, where it is sometimes extremely slender, or clavate; in *Syrphus*, where it is most depressed; in the *Mallota* group, and *Volucellini*, with the greatest convexity and shortness, and in *Senogaster*, with the remarkable contraction of the median segments. The hypopygium is usually inconspicuous, especially in the *Syrphini*, but in species of *Sphœrophoria*, and many of the *Xylotini* and *Eristalini*, it is enlarged and conspicuous. In *Eupeodes* the peculiar development of the two slender processes is remarkable. The structure of *Nausigaster* abdomen is the most peculiar; here the fourth segment is extraordinarily developed and arched, wholly excluding from sight the following segments and inclosing the terminal organs in a deep ventral cavity.

The legs, outside of secondary sexual characters, which will be spoken of further on, do not offer a very great deal of structural differences. They find their greatest slenderness in the *Syrphini*, *Melanostoma* and here rarely have any thickened parts, and then usually in In the *Eristalini* and *Xylotini* they are usually stouter, ar

with the hind femora elongated and thickened. In the *Milesini* the greatest elongation of the legs occurs, in the *Chrysogaster*-like forms the most shortening.

SECONDARY SEXUAL CHARACTERS.

Secondary sexual characters occur with great frequency in this family, and will offer many interesting subjects for future study. They are found in most parts of the body, but, as one would expect, are met with in the greatest diversity and number in the legs.

In the head a difference, constant throughout the family, is found in the eyes. In nearly all the males they are contiguous for a longer or shorter distance between the ocelli and antennæ (holoptic); in a few genera (as *Microdon*, *Chalcomyia*, *Crioprora*, *Triodonta*, *Mallota*, *Helophilus*, etc.) they are more or less widely separated by the front (dichoptic); yet in every case, to the practiced eye, the male can be distinguished with tolerable certainty by the front alone; even when the female is unknown there is never any excuse for confounding the sexes. The male eyes when dichoptic will always present an angularity that is wanting in the other sex, and there is always some narrowing of the front. The female front, though sometimes considerably narrowed, always has the margins straight, without angulation. In a few genera, all holoptic, the males show areas of enlarged facets near the upper portion of the eyes. This enlargement is most noticeable in *Allograpta* and *Catabomba*, but is also indicated in the forms related to *Xylota*. Although I do not know the habits of *Catabomba*, one can safely say that those with this enlargement are disposed to hover motionlessly in the air, and are especially well gifted with rapid flight. The male eye frequently has a greater pilosity than the female, as it is also often larger.

In a number of genera there is a greater development of the lower part of the front in the male, forming a protuberance upon which the antennæ are located. This is most apparent in the genera allied to *Milesia*. There is not much difference in the antennæ. In a number of genera (e. g., *Chrysotoxum*, *Chilosia*, *Brachyopa*, *Volucella*, *Sericomyia*, etc.) the third joint is larger and broader in the female, and in some the arista is less plumose. In the structure of the face the most important variations will be found in *Myiolepta*, where the male is provided with a small, but prominent, tubercle near the middle, which is wanting in the female. Similar differences will be seen in some other genera, as in species of *Chilosia*, *Chrysogaster*, and *Pterallastes*. The other differences between the sexes have already been adverted to. In the mouth organs I have observed but slight sexual differences; in some few genera, as in *Criorhina* spp., the female proboscis is longer than that of the males.

In the thorax I know of no structural sexual differences; nor, so far as I am aware, do any such exist in the wings.

In the abdomen, in addition to the primary characters, no differences of importance present themselves. The shape in the male is frequently

more slender, and with greater convexity above. In all those genera (*Ceria*, *Baccha*, *Sphegina*, etc.) where the abdomen is clubbed this character is more pronounced in the male. In the genera allied to *Mallota* the male abdomen is found more cylindrical toward the end.

The most important sexual characters are in the male legs, and probably subserve some purpose in the sexual relations, although such must often be difficult to understand, where otherwise closely allied species differ markedly in their presence or absence. In the front pair, *Platychirus* and *Pyrophæna ocymi* are the only ones known to me where structural differences are seen, the tibiæ and tarsi being more or less dilated in the male, and the same sex sometimes provided with femoral bristles. Differences in the middle pair are confined to *Pyrophæna ocymi* and some species of *Platychirus*, where likewise may occur a dilatation of the tarsi and structural peculiarities of the tibiæ. When we come to the hind pair the most numerous and striking plastic differences present themselves. In the coxæ there is sometimes a more or less prominent spur or process on the inner hind side in the male. In *Pipiza* (*Cnemodon*) this may be long and slender, but usually it is conical, as will be observed in *Triodonta*, *Xylota* sp., etc. In the femora, wherever there is thickening it is usually more pronounced in the male, as in *Mesograpta* sp., and genera of the *Eristalini* and *Xylotini*. In some of these, as for instance *Mesograpta geminata* and *Mallota*, the male femora are, in addition, more arcuate, sometimes very much so. In not a few genera the male is provided with one or more projections on the under side of the thickened femora. (In *Milesia* and *Spilomyia* (♀, ♂) there is a conical projection near the outer end. In *Senogaster* it is flattened and bifid; in others it takes the shape of an angular projection, most prominent in *Tropidia*. In some genera (♀, ♂) (as *Xylota*, *Brachypalpus*, *Brachyopa*, and especially *Syritta*) there is a row of spines or short bristles on the under side; in *Lepromyia* and species of *Myiolepta* this character is found below all the femora, which are also all thickened). In only one case (*Tropidia mamillata*) do I know of a long and cylindrical process near the basal end of the femur. In the hind tibiæ there are also differences. The most common are greater curvature and compression, especially in those cases where the femora are thickened. An excellent example will be found in species of *Mallota*. In some, as in *Spatigaster*, etc., the bending may be sharp, almost angular; in others the tibiæ are provided with more bushy and long pile in the male. In *Helophilus* spp., *Eristalis* spp., *Xylota* spp., *Triodonta*, and other genera, the tibiæ (♂) are provided with a more pronounced spur at the tip. In *Mallota* sp. and *Teuchocnemis* there is, in addition to the flattened tibiæ, a strong projecting spur in the middle in front, which lies on the inner side of the femora when flexed. In *Brachypalpus frontosus*, and in certain exotic genera, there is a smaller projection near the base of the tibiæ. In the hind tarsi the only sexual character with which I am acquainted consists in a thickening and elongation of the hind metatarsi. This peculiarity finds its greatest and remarkable develop

in *Microdon* (*Ubristes*), but is also seen in many of the *Chilosini* and *Melanostomini*; rarely if at all in the *Eristalini* and following groups.

In coloration and pilosity by far the greater number of species offer distinct differences. The most striking example of this is seen in *Triodonta curvipes*, where the male abdomen is red and the female black; singularly the hind legs in this species offer more sexual peculiarities than in any other. In some species with banded abdomen the yellow markings show a greater tendency to confluence in the female. In many the markings of the abdomen are more conspicuous in the male, or obsolete in the female; species of *Eristalis* and *Helophilus* will be recalled as examples. Again, in the male there is sometimes a tendency to melanism, in the antennæ (e. g., *Chilosia*), the legs (*Syrphus*), face (ibid.), coloration of the abdomen (*Chilosia*, *Sphegina*), and thorax (*Helophilus*). As a general rule the male coloration is more strongly indicated; such we know is in conformity with the general zoological law, that the male shows the greater number of ornamentations, both in color and structure. In the male the pile throughout is frequently longer, more abundant, and sometimes darker in color.

None of the foregoing sexual differences appear to be characteristic of the family. Thus, holoptic males are predominant throughout the order; differences in the size of the antennæ may be met with in the *Muscidæ*, etc.; similar or allied structural variations in the legs, in the *Tachinidæ*, *Dolichopodidæ*, *Midasidæ*, *Asilidæ*, etc.; of the abdomen in *Stratiomyidæ*, etc. On the other hand, sexual differences in the wings, as in the *Asilidæ*, and certain ornamentations of the legs, as in *Asilidæ*, *Tachinidæ*, *Dolichopodidæ*, *Empidæ*, etc., do not occur here.

What is the purpose of these sexual peculiarities? This is a question easily asked, but far less readily answered. Only this may be said: their use in general does not appear to be commensurate with their oftentimes striking development. Species, otherwise closely allied, sometimes show remarkable differences in this respect. Thus, *Helophilus distinctus* and *H. chrysostomus* are so closely related that they apparently have been hitherto confounded, yet in the former the male hind coxæ bear a strong spur, wanting in the latter. Very closely allied species of *Xylota* show the same peculiarity. *Tropidia mamillata*, notwithstanding the well-developed basal femoral process, does not differ much from *T. quadrata*. The same may be said of *T. calcarata*, with its coxal spur. *Mesograpta geminata* and *M. parvula* are closely allied, yet in the former the male hind femora are thickened and arcuated. The terminal tibial spur in *Helophilus*, *Xylota*, etc., is very uncertain in its appearance, while the internal median spur in *Mallota cimbiciformis* appears only to be a dimorphic peculiarity. Similar dimorphism apparently exists in such species as *Sepedon armatus* and *S. pusillus*, for instance, in the *Sciomyzidæ*. There certainly, however, seems to be a functional purpose for these structural developments; the only thing surprising is that their possession so often appears to have no effect upon other characters. We can readily imagine that the processes a

strengthening of the hind legs may be employed in the seizing and retention of the female, but why have these acquired peculiarities not had a greater result upon the species?

Another question, important to all systematic entomologists, arises from their discussion. Are secondary sexual characters serviceable as generic characters? Contrary to the opinion of many students, I hold that they are. It may strike one as absurd that the sexes may be located under different genera, but we must bear in mind that a species is composed of *both* sexes, and it is by the totality of characters that a genus is bounded. But such characters can not be indiscriminately used. Single differences of any kind are suspicious when not accompanied by others, and sexual characters should be avoided as far as possible when both sexes cannot be defined. Among the *Dolichopodidæ*, so rich in male characters, species as zoological entities rest chiefly in the male; the female is a reproducing organ, like the spermiferous barnacle. Classification is made no more difficult by the use of such characters, and is sometimes much simplified; besides it may bring related forms together; and is not this the real end of scientific classification?

GEOGRAPHICAL DISTRIBUTION.

In their geographical distribution, at least so far as the North American fauna is concerned, the *Syrphidæ* present no remarkable facts, though not a few of interest. The most noteworthy one is the wide distribution, in general, of genera and species. We have very few peculiar genera, and fewer still are aberrant from well-known types, *Nausigaster* being, perhaps, the most worthy of note in this respect. Forty-two genera are common to Europe and North America, and nearly thirty of our species are known to be common to the two continents, and it is very probable that this number will be increased by not a few. *Nausigaster* is so far known only from North America, but it will undoubtedly be found to occur in South America. *Mesograpta* is a peculiarly American genus; indeed, it may properly be called the characteristic genus of our fauna, not only on account of its restriction to this continent, but by reason of the large number of species and the multitude of individuals. Mr. Bigot, it is true, has described species of *Mesograpta* from New Caledonia, but it may most safely be said that his determinations are wrong. *Asarkina*, from Africa, is its nearest extra-American representative. *Copestylum*, though not differing very markedly from *Volucella*, may also be considered an American type. *Pterallastes*, *Teuchocnemis*, and *Triodonta*, though so far known to include only North American species, are feebly characterized, and can hardly be taken into account as distinctive American types. Nor is *Crioprora* a much better example, some of the European *Brachypalpi* approaching it closely. *Eupeodes*, *Merapioidus*, and *Senogaster*, on the other hand, are well differentiated American forms.

A comparison of the European and North American genera will be of interest, though in general only confirming certain laws of distribu-

ion that have long been established in other branches of systematic iology. I mean the greater resemblance between the Pacific and Euro- ean faunas than between the Atlantic and European. Of course we an yet only speak *ab uno disce omnes*. The Western fauna is not yet by ny means well known, but what is known is sufficient for the purpose. hus, the genus *Chilosia*, containing nearly one hundred European spe- ies, is very sparingly represented in the Eastern States, but seems to e rich in the West, and that, too, in European forms (hairy-eyed) not et discovered east of the mountains. Nearly the same may be said of *phærophoria*, *Melanostoma*, and *Platychirus*. *Syrphus*, so abundant in urope, has so far five species peculiar to the East, ten to the West, nd eight in common. *Arctophila*, *Pocota*, and certain species, occur nly in Europe and Western America. The rule has been so often con- rmed that it may be accepted without hesitation, I think, viz: that astern American species, identical with European ones, have usually distribution across the continent. On the other hand, the example of *atabomba pyrastri*, an European species found in great abundance in ie Western but not in the Eastern region, is a fact bearing in the same irection. To this last species I think we may safely add *Eristalis tenax* s being primarily Western, but which, during late years, has been istributed from the West eastward. I have no explanation to give how the European species have reached the Western region, if they e not in reality indigenous there, whether by way of the Atlantic tates, or whether the species common to the two sides of the conti- nts have traveled from West to East; but I certainly think in some ses, such as that of *Eristalis tenax*, it has been the latter way.

Of all the numerous species common to Europe and America, very w are confined, so far as we know, to the Eastern States, and every w examination of Western material subtracts from the number. The rger number, so far, of those genera peculiar to America are found in e East, and nearly all the American genera common to Europe are und in the West. Exceptions to this are seen in *Eupeodes*, *Pelecocera*, *mula*, and especially *Rhingia*, etc. Again, such genera as *Microdon*, *anthogramma*, *Ceria*, etc., seem to indicate that those genera with few ecies in Europe are best represented in the Eastern States; but the cts will allow us to predicate but little here.

In speaking of the Western fauna, I refer especially to the region nited by climatic conditions, and not extending further east than estern Nebraska, Middle Kansas, and Texas. From several years' tive collecting in Western Kansas, I long ago recognized the almost arp limitation of species. In some cases, especially among Coleop- ra, the eastern lines of habitat could be traced almost as clearly as e floral habitats on the mountain side.

Yet another fact of great interest is the entire absence of several rge European genera in our fauna—*Eumerus* and *Merodon* especially. t is very doubtful whether the former will ever be found in the United tates, particularly the Eastern ones.

I have endeavored to sum up our knowledge of the geographical distribution in the following table. It will, of course, be understood that the data of the occurrence of genera (in their modern signification) in Asia, Africa, and South America are yet meager, but I have given such as I have been able to obtain. The occurrence of genera is indicated by asterisks, which are replaced by figures when species are known to be common.

Tabular synopsis and geographical distribution of genera.

Genera.	Whole number of species.	Eastern species.	Western species.	Common.	Common to Europe.	Asia.	Africa.	South America.	Number of European species.
Microdon	12	8	2	2	*	*	*	*	3
Chrysotoxum	6	3	3		*	*	*	*	12
Paragus	4	2	*	2	2	*	*	*	10
Nausigaster	1		1						
Pipiza	14	14	*		1	†	*	*	10
Pallota	1	1			*				2
Chrysogaster	8	4	4		*	*		1	11
Chilosia	14	3	9	2	*	*	*	*	38
Melanostoma	12	1	10	1	1	*	†	1	15
Pyrophæna	2	1	*	1	2				3
Platychirus	5	1	2	2	1	*	*	*	10
Leucozona	1	*	*	1	1				3
Catabomba	1		1		1		1	1	1
Eupeodes	1		1						
Syrphus	23	5	10	8	5	*	*	*	38
Didea	2	1	*	1					3
Xanthogramma	5	4	*	1		*	*		1
Allograpta	2	*	1	1				1	
Mesograpta	5	2	*	3				*	
Sphærophoria	8	6	1	1	1	*	*	*	24
Pelecocera	1	1			*	*			4
Neoascia	2	1	1		*	*			11
Sphegina	4	1	1	2	*	*			5
Baccha	10	5	3	2	1	*	*	*	3
Chalcomyia	1	1							
Myiolepta	4	1	1	2	*		*	*	1
Rhingia	1	1			*		*	*	3
Eugeniamyia	1	*	*	1	1				1
Brachyopa	3	*	1	2	*				9
Volucella	18	4	10	4	*	*	*	*	7
Copestylum	1		1					*	
Sericomyia	6	4	1	1	1	*			4
Arctophila	1		1		*				2
Eristalis	20	9	7	4	2	3	1	3	28
Doliosyrphus	1		1		*			*	
Pteroptila	1	*	*	1				*	
Helophilus	19	12	5	2	*	*	*	*	18
Pterallastes	1	1							
Teuchocnemis	2	2							
Mallota	3	2	1		1	*		*	5
Triodonta	1	*	*	1					
Tropidia	3	2	*	1	*			*	4
Criorhina	12	8	4		*	†	†	*	11
Criorprora	4	*	3	1					
Pocota	1		1		*				1
Brachypalpus	6	4	2		*				5
Xylota	21	8	9	4	2	*	*	*	13
Senogaster	1	1						*	
Syritta	1	*	*	1	1	1	1	1	2
Chrysochlamys	4	3	1		*			†	4
Merapioidus	1	1							
Spilomyia	6	4	2		*				2
Temnostoma	6	6			1				3
Milesia	1	1			*	*			2
Sphecomyia	3	1	2		1	*			1
Ceria	6	2	3	1	*	*	*	*	6
Total	304	142	106	56	27				

GEOLOGICAL DISTRIBUTION.

Through the courtesy of Mr. Scudder, I was enabled to examine his ollection of specimens, and the drawings for his forthcoming work on ossil insects, in this family. The specimens are, many of them, in a ruly remarkable state of preservation, admitting frequently of definite nd decided opinions as to their relations. Of the thirty or more spe- ies which Mr. Scudder had separated out, I was first struck with the ct that probably all belong to the first division of the family with a asal cross-vein, a conclusion at which Mr. Scudder had already, inde- endently, arrived. There are two possible exceptions, but both, in iew of the general relations of the other specimens, doubtful. The rst was the specimen which Mr. Scudder had doubtfully referred to *ristalis* (Bull. U. S. Geol. Surv., iii, 756). As regards this, however, I hink that the problematic determination is not the correct one. The ther specimen—named *Milesia quadrata* (Bull. U. S. Geol. Surv., iv, 2)—I would, contrary to the opinion first held by me, remove from is group. The neuration is, in large part, conjectural, and in all robability has, as Mr. Scudder described, a basal cross-vein, removing from *Milesia* and its congeners. The species is unusually large for a *rphus*, but yet its affinities are evidently with that genus.

The next most striking point observed was the predominance of the *rphus* forms. The large number of the species, as well as specimens, long to this genus in apparently a narrow sense, and many of them e peculiarly characteristic. Singularly, all of them appeared to have e abdominal cross-bands interrupted or emarginated. In none did I id entire bands as in *S. ribesii* or *Lesueurii*. Not a few had the pic- re very like that of *Didea laxa*. The neuration in all showed much iformity. The anterior cross-vein is basal and only rarely with any rked degree of obliquity. In the larger number the third vein is aight, or anteriorly convex, but occasionally gently sinuous, as in *tatomba pyrastri*, for instance. A very noticeable tendency was ob- ved in the termination of the third vein near or beyond the tip of the ng, as in *Rhingia* and some species of *Chilosia*.

Chrysogaster was identified with considerable certainty in specimen . 12621. The profile of the head, moderately elongate antennæ, size, tallic coloration, apparent punctulation, and what seemed evidently ose markings on the front, are all strongly characteristic. The neu- ion is, however, more like that of *Syrphus* or *Chilosia* than that of typical *Chrysogaster;* nevertheless I should feel little hesitancy in cing the species in the genus in the sense accepted for our American cies. Another species (specimen No. 5102) is very characteristic of *hegina*, although the structure of the head could not be made out. e size, thickened hind femora, provided with spines below, and the ngate spatulate shape of the abdomen, were especially striking. The uration, so far as could be made out, is *Sphegina*-like.

Numerous specimens of *Chilosia* have been determined, some of them with certainty, by the facial profile, antennæ, coloration, neuration, shape of abdomen, and structure of legs. Perhaps the most characteristic is specimen No. 8781, which lies upon the side, giving an excellent profile of the head. Other specimens seemed to approach *Pipiza* or *Psilota*, though one could not say with absolute certainty that these genera, in their modern acceptation, actually occur among them, though I very much think that one or both do.

Rhingia seemed to be recognizable with sufficient certainty, the determination based upon coloration, shape of abdomen, large wings and almost typical neuration, and slender legs, especially well shown in specimen No. 11099.

It may safely be said that *Syrphus*, *Chilosia*, *Chrysogaster*, *Rhingia*, and *Sphegina* occur in the American Tertiary beds, to which may in all probability be added *Pipiza*. There is yet another form which could not be located in any of the known existing North American genera with certainty. The specimen (No. 7035) is of large size, in shape much like that of *Mallota*, the hind femora apparently much thickened, the antennæ rounded, the penultimate section of the fourth vein long, and the anterior cross-vein basal and rectangular. The form is nearest allied to *Myiolepta*.

In conclusion, I cannot refrain from expressing my admiration of the perfection and accuracy of the dipterological drawings, and the care with which the specimens have been studied by Mr. Scudder. Mr. Scudder has given a summary of our present knowledge of insect paleontology in Professor Zittel's Handbuch der Paleontologie, from which the following is given to complete the present status of our paleontological knowledge of this family:

"A very obscure object from Solenhofen is referred by Weyenberg to *Chilosia*, and Giebel refers to a new genus, *Remelia*, a minute fly figured by Brodie from the English Purbeck, but its reference here is very doubtful.

"In the Tertiaries this family is more abundant and varied than any of the other families of *Diptera cyclorrhapha*. Burmeister and Terquem both recognize *Microdon* at Aix, *Pipiza* has been described from Rott, *Chilosia* from Wyoming, and seven species of *Syrphus* from Oeningen, Radoboj, Rott, and Senegaglis, besides which it has been recognized in amber; in amber, also, are found two peculiar genera allied to *Ascia* and *Xylota*, besides *Chilosia*, *Volucella*, and *Criorhina; Rhingia* is noticed at Aix, *Eristalis* described from Utah, *Helophilus* and *Merodon* from the Rhine, and *Milesia* from Wyoming. Lastly some thirty or more species of various genera occur at Florissant, and a considerable number of them in a remarkable preservation.

"There are descriptions of *Pipiza*, *Syrphus*, *Merodon*, and *Helophilus*."

The American fossil species already described are the following:

ristalis lapideus Scudder, Bull. U. S. Geol. Surv., iii, 756.

Based upon an imperfect specimen, and, as before stated, probably ot belonging to this genus.

filesia quadrata Scudder, Bull. U. S. Geol. Surv., iv, 752.

Probably not a *Milesia*; see remarks on previous page.

Chilosia ampla Scudder, Bull. U. S. Geol. Surv., iv, 753.

Most probably a true *Chilosia*.

CHRONOLOGICAL LIST OF GENERA.

In the following list I have endeavored to give all the generic names hitherto proposed in the family of *Syrphidæ*, arranged chronologically. Such names as I believe to be well founded, or which I cannot find any reliable data as to their synonymy, are printed in heavy type, in order to distinguish them from those which are believed to be synonymous. The latter, printed in italics, it will be observed, are preceded by numbers indicating their synonymy. Undoubtedly from among the former others will yet be shown to be synonyms, and from the latter not a few may be finally accepted as subgeneric, or as applying to species sufficiently distinct to justify their use. I have given, in brackets, such of the various spellings as I have been able to find. The habitats given are of the type species.

1763.

1.—**Rhingia** [*Rhyngia*] Scopoli, Entom. Carniol., 358. Europe.

1764.

2.—**Volucella** Geoffroy, Hist. des insectes des environs de Paris, ii.

1775.

3.—**Syrphus** Fabricius, Syst. Entom., 762. Europe.

1794.

4.—**Ceria** Fabricius (non Scopoli, 1763), Entom. Syst., iv, 277. Europe.

1801.

2.—*Cænogaster* Dumérill, Expos. et dict. d'hist. nat. Europe.

1803.

5.—**Chrysotoxum** Meigen, in Illiger's Mag., ii, 259. Europe.

6.—**Spilomya** [*Spilomyia, Spylomya*] Meigen, ibid., 273. Europe.

23.—*Heliophilus* Meigen, ibid., ii, 273. Europe.

7.—**Chrysogaster** Meigen, ibid., 274. Europe.

8.—**Doros** Meigen, ibid., 274. Europe.

9.—**Sericomya** [*myia, myza*] Meigen, ibid., 274. Europe.

10.—**Elophilus** [*Helophilus*] Meigen, ibid., 274. Europe.

11.—**Merodon** Meigen, ibid., 274. Europe.

12.—**Microdon** Meigen, ibid., 275. Europe.

2.—*Pterocera* Meigen, ibid. Europe.

1804.

13.—**Psarus** Latreille, Hist. nat. Crust et Ins., xiv, 357. Europe.

12.—*Aphritis* Latreille, ibid., 358. Europe.

14.—**Paragus** Latreille, ibid., 359. Europe.

15.—**Milesia** Latreille, ibid., 361. Europe.

16.—**Eristalis** Latreille, ibid., 363. Europe.

1805.

17.—Baccha [*Bacha*] Fabricius, Syst. Antl., 199. **Europe.**

3.—*Scæva* Fabricius, ibid. **Europe.**

1806.

18.—Callicera Panzer, Fauna Germ., civ. **Europe.**

1816.

19.—Pipiza Fallen, Dipt. suec., Syrph., 58. **Europe.**

1820.

20.—Graptomyza Wiedemann, Nov. Dipt.

1822.

107.—*Ascia* Meigen (non Scopoli, 1777), Syst. Beschr., iii, 185. **Europe.**

21.—Sphegina [*Sphægina*] Meigen, ibid., 193. **Europe.**

22.—Eumeros [*us*] Meigen, ibid., 202. **Europe.**

23.—Xylota Meigen, ibid., 211. **Europe.**

24.—Psilota Meigen, ibid., 256. **Europe.**

25.—Brachyopa Meigen, ibid., 260. **Europe.**

26.—Cheilosia [*Chilosia*] Meigen, ibid., 296. **Europe.**

27.—Pelecocera [*Pelocera*] Meigen, ibid., 340. **Europe.**

28.—Tropidia Meigen, ibid., 346. **Europe.**

29.—Mallota Meigen, ibid., 377. **Europe.**

1824.

12.—*Ceratophya* [*Cerathophya, phyia*] Wiedemann, **Analect. Entom., 14.** America.

1825.

2.—*Ornidia* St. Fargeau and Serville, Encycl. méth., x. **Europe.**

30.—Platycheirus [*Platychirus*] St. Fargeau and Serville, ibid., 513. **Euro**

31.—Pocota [*Plocota*] St. Fargeau and Serville, ibid., 518. **Europe.**

32.—Sphærophoria [*Spæraphoria*] St. Fargeau and Serville, ibid., 513. **E**

33.—Syritta [*Siritta*] St. Fargeau and Serville, ibid., 808. **Europe.**

2.—*Temnocera* St. Fargeau and Serville, ibid., 786.

34.—Temnostoma St. Fargeau and Serville, ibid., 518. **Europe.**

35.—Sphecomyia [*Sphæcomyia, Sphegomyia, Specomyia*] Latreille, Fam. nat Règne Animal. North America.

1830.

36.—Platynochætus [*etus, œtus*] Wiedemann, Auss. zw. Ins., ii, 147. **Euro**

1834.

6.—*Mixtemyia* [*Mixomyia, Myxtemyia*] Macquart, Hist. nat. dipt., i, 491. America.

37.—Criorhina [*Criorrhina, Chryorhina, Chriorhyna, Criorhyna*] Macquart, 497. Europe.

12.—*Chymophila* Macquart, ibid., 486.

38.—Didea Macquart, ibid., 508. **Europe.**

16.—*Priomerus* Macquart, ibid., 511.

39.—Senogaster [*Stenogaster*] Macquart, ibid., 519. **South America.**

40.—Brachypalpus Macquart, ibid., 523. **Europe.**

41.—Ocyptamus Macquart, ibid., 554. **North America.**

7.—*Orthoneura* Macquart, ibid., 563. North America.

Palpada Macquart, ibid.

1838.

12.—*Dimeraspis* Newman, Entom. Mag., v, 372.

42.—Myolepta [*Myiolepta*] Newman, Entom. Mag., v, **373.**

38.—*Enica* Meigen, Syst. Beschr. europ. zw. Ins., vii, 140. **Europe.**

23.—*Micraptoma* Westwood, Introd. Class Ins., i.

1840.

Zetterstedt, Ins. Lapp. Europe.

43.—**Triglyphus** [*Triglyptus*] Loew, Oken's Isis, 565. Europe.
32.—*Melithreptus* [*Melitreptus*] Loew (non Veill.), ibid., 577. Europe.

1842.

44.—**Mixogaster** Macquart, Dipt. exot., ii, 2, 14. South America.
45.—**Megaspis** Macquart, ibid., 27. Eastern Asia.
76.—*Plagiocera* Macquart (non Klug, 1834), ibid., 59. North America.
46.—**Dolichogyna** Macquart, 65, ibid. Chili.
29.—*Imatisma* Macquart, ibid., 67. North America, India.
47.—**Asarkina** [*Asarcina*] Macquart, ibid., 77. Africa.

1843.

48.—**Sparigaster** [*Spatigaster, Spathiogaster, Spathegaster, Sphathigaster, Spasiogaster, Spazogaster*] Rondani, Esam. d. var. sp. Ditt. Brasil., Rev. Entom.

1844.

58.—*Ferdinandea* [*æa, ia*] Rondani, Ann. Sc. Nat. di Bologna (2) ii, 195.

1846.

49.—**Copestylum** Macquart, Dipt. exot., 1er Suppl., 124. Central America.

1847.

50.—**Somula** Macquart, Dipt. exot., 2e Suppl., 56. North America.

1848.

51.—**Phalacromya** [*myia*] Rondani, Esam. d. var. sp. Ditt. Brasil.

1849.

52.—**Meromacrus** Rondani, Stud. Entom.

1850.

53.—**Dolichomerus** Macquart, Dipt. exot., 4e Suppl., 131. Asia.
54.—**Senaspis** [*Stenaspis*] Macquart, ibid., 133. Africa.
55.—**Orthoprosopa** Macquart, ibid., 4e Suppl., 143. Tasmania.
104.—*Polydonta* Macquart (non Fischer, 1807), ibid., 144. North America.
56.—**Coiloprosopa** (*Coilometopa*) Macquart, ibid., 145. Tasmania.
Plesia Macquart (non Jur., 1807; nec Klug, 1833), ibid., 156. New Zealand.
57.—**Hemilampra** (*Misolampra*) Macquart, ibid., 159. Tasmania.
4.—*Sphiximorpha* [*Sphyximorpha, Sphixiomorpha, Spiximorpha*] Rondani, Ann. Soc. Ent. de France. Europe.

1851.

58.—**Chrysochlamis** [*Chrysochlamys, Chryzoclamys*] (Rondani) Walker, Ins. Brit., i, 279. Europe.

1852.

35.—*Tyzenhausia* [*zia*] Gorski, Annal. ad Ent. prov. Rossici, 170. Europe.

1855.

84.—*Toxomerus* Macquart, Dipt. exot., 5e Suppl., 92. North America.

1856.

29.—*Zetterstedtia* Rondani, Dipt. Ital. Prodr., i, 44. Europe.
15.—*Sphixæa* [*Sphixea, Sphyxea, Sphixæa, Sphyxæa*] Rondani, ibid., 46. Europe.
59.—**Caliprobola** [*Calliprobola*] Rondani, ibid., 47. Europe.
3.—*Lasiophticus* Rondani, ibid., 51. Europe.
19.—*Heringia* [*Heryngia*] Rondani, ibid., 53. Europe.
10.—*Myathropa* [*Myatropa, Myiatropa*] Rondani, ibid. Europe.
3.—*Epistrophe* [*us*] Walker, Ins. Saunders, 242. North America.
12.—*Ubristes* Walker, ibid., 217. Brazil.
82.—*Amathia* Walker (non Lam., nec Roux, nec Dup.), ibid., 223. Brazil.
60.—**Citibæna** Walker, ibid.
61.—**Deineches** Walker, ibid., 227.
62.—**Baryterocera** Walker, ibid.

1857.

63.—**Lejops** [*Liops*] Rondani, Dipt. Ital. Prodr., ii, 33, note. Europe.
42.—*Xylotæja* Rondani, ibid., 96. Europe.

64.—**Mesembrius** Rondani, ibid., 50, note. Europe.
19.—*Pipizella* Rondani, ibid., 185. Europe.
65.—**Simoides** Lœw, Dipt. Südafrikas. Africa.
7.—*Campyneura* [*Campineura, Camptoneura*], Rondani, ibid.
66.—**Rhoga** Walker, Trans. Ent. Soc. Lond.
67.—**Lycastris** Walker, ibid.
16.—*Eristalinus* Rondani, ibid., 40. Europe.
16.—*Eristalomya* [*myia*] Rondani, ibid., 40. Europe.
Melanogaster Rondani, ibid., 166. Europe.
Lejogaster Rondani, ibid., 166. Europe.
Lejota [*Liota*] Rondani, ibid.

1858.

37.—*Dasymyia* Egger, Verh. zool.-bot. Gesellsch.

1859.

7.—*Cryptineura* [*Cryptoneura*] Bigot, Rev. et Mag. Zool., 307. North America.
67.—*Lycastrirhyncha*, Bigot, ibid., 307. South America.
68.—**Cyphipelta** Bigot, ibid., 307; Röder, Wien. ent. Zeit., i, 61. Australia.

1860.

69.—**Melanostoma** Schiner, Wien. ent. Monatschr., iv, 213. Europe.
70.—**Pyrophæna** Schiner, ibid., 213. Europe.
71.—**Eriozona** Schiner, ibid, 214. Europe.
72.—**Leucozona** Schiner, 214. Europe.
73.—**Arctophila** Schiner, ibid., 215. Europe.
74.—**Xanthogramma** Schiner, ibid., 215. Europe.

1863.

75.—**Pterallastes** [*Pterelastes*] Loew, Centur., iv, 80. North America.

1864.

105.—*Lepidomyia* Loew (non Bigot, 1847), Centur., v, 38. North America.
16.—*Axona* Walker (non Stål, 1864), Proc. Linn. Ent. Soc., vii, 211. Mysol.
23.—*Planes* Rondani, Archiv. Zool. anat. e Fisiol., iii, 9. Europe.

1865.

84.—*Mesogramma* Loew, Centur., vi, 47. North America.
76.—**Pteroptila** [*Pterophila*] Loew, ibid., 59. North America.
19.—*Cnemodon* Egger, Verh. zool.-bot. Gesellsch., xv, 573. Europe.
77.—*Eriophora* Phillipi, Verh. zool.-bot. Gesellsch., xv, 735. South America.
78.—**Sterphus** Phillipi, ibid., 737. South America.
37.—**Stilbosoma** Phillipi, ibid, 736. Europe.
79.—**Macrometopia** Phillipi, ibid., 740. South America.
19.—***Penium*** [***Pennium***] Phillipi, ibid., 741. South America.
Pis **Phillipi, ibid.**, 742. South America.
80.—**Palumbia** Rondani, Atti Soc. Ital. sc. nat., viii, 129.
81.—**Aspeytia** [*Aspeitia*] Walker, Proc. Lin. Soc., viii.

1868.

82.—**Salpingogaster** Schiner, Novara Exped., 344. South America.
83.—**Exocheila** [*Exochila*] Rondani, Atti d. Soc. Ital. sc. nat., xi.
Glaurotricha (*Haurotricha*) Thomson, Eugen. Resa. South America.

1869.

12.—*Mesophila* Walker, List, etc., iv, 1157. North America.

1872.

84.—Mesograpta Loew, Centur., vol. ii, 210. North America.

1876.

—Allograpta Osten Sacken, Bull. Buff. Soc. Nat. Sc., iii, 49. North Amer—
Tæniochœnemis Osten Sacken, ibid., 58. North America.

1877.

87.—Catabomba Osten Sacken, West. Dipt., 325. North America.
88.—Eupeodes Osten Sacken, ibid., 328. North America.

1878.

89.—**Crioprora** Osten Sacken, Cat. Dipt., 136. North America.
39.—*Acrochordonodes* Bigot, Bull. Soc. Ent. Fr., No. 13, 131. S. America.

1879.

90.—**Merapioidus** [*es*] Bigot, Bull. Soc. Ent. Fr., No. 6, 64. North America.

1881.

91.—**Solenaspis** Osten Sacken, Ann. d. Mus. civ. d. stor. nat. Genoa, 442. New Guinea.

1882.

37.—*Brachymyia* Williston, Canadian Entomologist, xiv, 77. North America.
31.—*Hadromyia* Williston, ibid., 78. North America.
98.—**Eugeniamyia** [*Eugeniomyia*] Williston, ibid., 80. North America.
3.—*Ancyclosyrphus* Bigot, Bull. Soc. Ent. Fr., No. 6,78. Europe.
37.—*Eurhinomallota* Bigot, ibid., 78. Mexico.
92.—**Simosyrphus** Bigot, ibid., 79.
3.—*Ischyrosyrphus* Bigot, ibid., 78. Europe.
93.—**Ptilostylomyia** Bigot, ibid., No. 12. Spain.
2.—*Atemnocera* Bigot, ibid. South America.
94.—**Doliosyrphus** [*Dolyosyrphus*] Bigot, ibid., No. 13. Central America.
95.—**Tigridemyia** [*Tigridimyia, Tigridiamyia*] Bigot, ibid. Java.
96.—**Prionotomyia** [*Prionotomys*] Bigot, ibid. Senegal.
97.—**Eumerosyrphus** Bigot, ibid., No. 14. India.
10.—*Asemosyrphus* Bigot, ibid. Mexico.
89.—*Romaleosyrphus* Bigot, ibid. Mexico.
99.—**Ortholophus** Bigot, ibid. Chili.
100.—**Kirimyia** Bigot, ibid., No. 15. Japan.
101.—**Endoiasimyia** Bigot, ibid. India.

1883—1886.

10.—*Eurhimyia* Bigot, Bull. Soc. Ent. Fr., No. 3. Europe.
26.—*Cartosyrphus* Bigot, Annales Soc. Ent. Fr., 230. Europe.
27.—*Euceratomyia* Williston, 1884, Wien. Ent., Zeit., iv. North America.
102.—**Nausigaster** Williston, 1885, Trans. Amer. Ent. Soc. North America.
103.—**Chalcomyia** Williston, Bull. Brookl. Ent. Soc., vii, 133. North America.
104.—**Triodonta** Williston, ibid., 1886, p. 136. North America.
105.—**Lepromyia** Williston, ante, p. 31. North America.
106.—**Cynorhina** Williston, ante, p. 209. North America, Europe.
107.—**Neoascia** Williston, ante, p. 111.

DEFINITION OF TERMS.

HEAD.

Holoptic.—Contiguity of the eyes in the male, between the vertex and the antennæ.

Dichoptic.—Separation of the eyes by the front in all females, and some males as in *Chalcomyia, Helophilus, Triodonta, Criorhina* sp., etc.

Vertex.—The uppermost border of the head between the eyes.

Ocelli.—Three small, simple eyes near the vertex on the upper part of the front.

Front.—The space included between the eyes, the vertex, and the antennæ.

Vertical triangle.—In the male the small triangle upon which the ocelli are situated, limited behind by the vertex, in front by the eyes.

Frontal triangle.—In the male the triangular space between the eyes below, limited by a line drawn through the base of the antennæ.

Frontal or *antennal process.*—The more or less pronounced projection upon which the antennæ are inserted.

Antennæ.—Inserted close together in the line between the front and face, composed of three joints, the third of which bears the:

Arista.—A slender bristle situated upon the upper border of the third joint, microscopically jointed near its base; or:

Style.—A thickened jointed arista (in *Ceria* and *Pelecocera*) situated at or near the tip of the third joint.

Face.—The space between the base of the antennæ and the oral margin, limited on the sides by the eyes and cheeks.

Facial tubercle.—A more or less pronounced median convexity below the middle of the face.

Cheeks.—The space between the lower borders of the eyes and the oral margin, merging into the face in front and limited by the occipital margin behind.

Occiput.—The whole posterior surface of the head.

Orbits.—A narrow indefinite space immediately bordering the eyes, and called vertical, or superior; frontal and facial, or anterior; the orbits of the cheek, or inferior: occipital, or posterior.

Epistoma.—The oral margin of the face, and the region immediately adjacent.

Oral or *buccal* cavity.—The mouth.

Proboscis.—Mouth organs, near the base of which are inserted the small, one-jointed *palpi*, and terminating in two fleshy lips, the *labellæ*.

Mentum.—The posterior oral margin.

THORAX.

Dorsum.—The whole upper surface, limited by the dorso-pleural sutures laterally, the scutellum posteriorly, and the neck anteriorly.

Pleuræ.—The lateral surfaces of the thorax.

Pectus.—The inferior surface of the thorax between the legs.

Scutellum.—A sub-hemispherical body behind, cut off by an impressed line from the dorsum of the thorax.

Metanotum.—The posterior surface of the thorax between the scutellum and the base of the abdomen.

Humeri or *shoulders.*—The anterior superior angles of the thorax.

Post-alar callosities.—Rounded processes on the posterior lateral margins of the dorsum.

Transverse suture.—A transverse groove in front of the root of the wings, obsolete in the middle of the dorsum.

Dorso pleural suture.—The lateral suture, between the dorsum and the pleuræ, extending from the humeri through the base of the wings.

Tegulæ.—Two membranous scales situated behind the immediate base of the wings, the upper overlapping the under.

Halteres or *balancers.*—An organ with a slender stem terminating in a rounded knob, inserted in the metathorax just in front of the lateral base of the abdomen.

ABDOMEN.

Incisures.—The sutures separating the segments.

Venter.—The whole under surface of the abdomen

Hypopygium.—The male sexual organs and terminal segments of abdomen.

Oviduct or ***oriposito***r.—The terminal segments of the female abdomen.

LEGS.

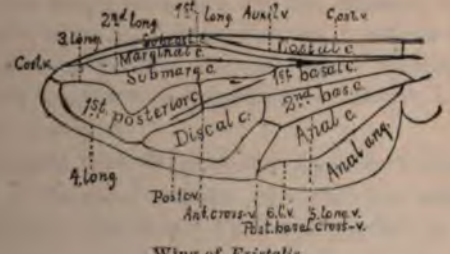
Coxæ.—Basal segment attached to the thorax, terminating in a small ring-like segment, the *trochanter*; next most elongate portion is the *femur*; then follows the *tibia*; the junction is called the *knee*, and expresses the immediate contiguity of the tibia.

por

—Composed of the five joints of the *tarsi*, the basal one of which is called the *sus*, the distal one terminating in two *claws* or *ungues*, on the under side of each ch is a small membranous appendage, the *pulvillus*.

WINGS.

ers or *margins*, *anterior*, *exterior*, and *posterior* of the wing, directed transversely.
t.—The lobe or flap of the wing, without veins, on the basal posterior part.
tion.—*Costal vein*, the one bordering the anterior margin of the wing; *auxiliary*, parallel with the costa from the base, and terminating in that vein near its ; connected towards its base with the costa by a transverse cross-vein, the *l cross-vein;* the *first longitudinal* vein arises from the auxiliary-vein in the y of the humeral cross-vein, follows the auxiliary subparallel, and is inserted costa; the *second longitudinal* vein arises from the first longitudinal a little the humeral cross-vein, follows the former, and is inserted in the costa, or some- n the first vein before its tip; the *third longitudinal* arises by a fork from the longitudinal, a little distance before the termination of the auxiliary, and is d in the costa at its tip; in its course it gives off a short branch, the *anterior l cross-vein*, to connect with the fourth longitudinal vein; *fourth longitudinal* rises from the second main vein-stem opposite the humeral cross-vein and ates in the third longitudinal a short distance before its tip; it gives off, first *terior basal cross-vein* behind, opposite the origin of the third vein, second the r cross-vein to connect with the third longitudinal, and, just before it bends d to connect with the third vein, it receives the *posterior cross-vein;* the *fifth dinal* vein arises near the origin of the fourth and terminates a little before the or border of the wing; opposite the anterior basal cross-vein it gives off the *or basal cross-vein*, is then directed angularly forwards to join the anterior basal ein, then follows parallel to its first section to connect with the posterior cross- here it terminates, or is sometimes extended a short distance as a stump; the *ngitudinal vein* arises near the origin of the fifth and terminates in or near the or border of the wing, a little before the middle; just before its end it receives *terior basal cross-vein.*



Wing of *Eristalis*.

costal cell is included between the auxiliary vein and the costa. The *subcostal* bounded in front by the auxiliary vein and the costa, behind by the first longi- l. The *marginal* cell is inclosed by the first and second longitudinal veins, when the cell is closed, in part in front by the costa when the cell is open. *bmarginal* cell lies between the second and third veins, touching the costa rly for a short distance, and the tip of the first longitudinal vein when the al cell is closed. The *first basal* cell is bounded in front by the basal sections first, second, and third longitudinal veins, exteriorly by the anterior cross-vein, orly by the fourth longitudinal vein. The *second basal* cell is bounded in front fourth longitudinal vein, exteriorly by the anterior basal cross-vein and the section of the fifth longitudinal vein, posteriorly by the fifth longitudinal. *ird basal*, or *anal*, cell is bounded in front by the fifth longitudinal vein, ex-

teriorly by the posterior basal cross-vein, posteriorly by the sixth longitudinal. The *first posterior* cell is bounded in front by the third longitudinal, behind and exteriorly by the ultimate and penultimate sections of the fourth vein, internally by the anterior cross-vein. The *discal* cell is inclosed in front by the fourth longitudinal, behind by the fifth longitudinal, exteriorly by the posterior cross-vein, internally by the anterior basal cross-vein. The *third posterior* cell lies between the fifth longitudinal and the posterior basal cross-vein.

Stigma.—A colored spot near the tip of auxiliary vein.

VESTITURE.

Pile.—This term properly should be restricted to thick, fine, short, and erect hair, as in the pile of velvet; in reality, however, the word is incapable of definite limitation, and is here generally employed, the word hair being only used to express very sparse or coarse pile, as in the hair of the face in *Chilosia*, or the sparse vestiture of the eyes in *Syrphus*.

Macrochæta, or bristles, are only present in *Chilosia*, spp., *Brachyopa*, spp., *Eupeodomyia*, *Volucella*, spp., and *Chrysochlamys*, on the thorax, and in a few others on the legs; never on the head.

Pollen, or *dust*, is that which conceals or obscures the shining or opaque ground color to a greater or lesser degree, and is more or less easily removed by moisture or rubbing.

Tomentum primarily indicates short, flattened, appressed hairs, and is only found in *Lepromyia*, *Myiolepta*, *sp.*, though in some other cases the term is used to designate coarse pollen, as in *Temnostoma*.

Pubescence is here used only to indicate very short, nearly microscopical hairs, as the arista, wings, etc.

APPENDIX.

MIXOGASTER.

er Macquart, Dipt. Exot., ii, 2, 14, 1842.

s will be recognized without difficulty from what has been introduction. The known species resemble *Ceria* in shape, head of *Microdon*. Type of genus, *M. conopsoides* Macquart, ica. Thomson has described a species from Australia.

mexicanus Macquart, Dipt. Exot., 1er Suppl., 123, pl. x, fig. 15.—

PIPIZA.

pes.

assipes Bigot, Ann. Soc. Ent. Fr., 1884, 557.

North America (Bigot).

h, 7mm. *Nigra, vix nitida. Antennarum segmento tertio is; facie cinereo parcè tomentosâ; calyptris albis, halteribus is pallidissimè fuscanis, basi hyalinis, maculâ stigmaticali libus posticis parum incrassatis.*

peu luisant, presque glabre. Antennes 3e segment et ; face avec un fin duvet grisâtre, clair semé; un peu de sur les flancs ainsi que sur les cuisses; cuillerons blancs, stacés; ailes un peu roussâtres, hyalines à la base, macule roussâtre; genoux fauves, pieds postérieurs légèrement tout le métatarse.—1 specim., —, Bigot, *l. c.*

chella, ante, p. 27.

mprobable that *Chrysogaster Apisaon* Walker, List, etc., iii, ork), is the same as this. At least the hairy eyes and elon- æ indicate that it is a *Piptza* (*Pipizella*) or *Psilota*.

PSILOTA.

ata.

nation of a number of specimens in the National Museum to give a more complete description of this species.

h, 8mm. Metallic black. Antennæ black; third joint elon- four times as long as wide, reaching nearly to the epistoma. mall, not much projecting. Face white pilose. Eyes long, ow pilose. Dorsum of thorax rather thickly reddish yellow- Abdomen elongate oval, shining black with a light brassy pile reddish yellowish, abundant, erect. Legs black. Base

of tibiæ and tarsi luteous. Wings brownish on outer part; last two sections of fourth vein nearly equal, short appendiculate at the angle, first posterior cell short petiolate.

♀. Face nearly vertical and straight to just above the epistoma, which is moderately produced. Pile of front darker. Dorsum of thorax with rather thin lutescent pile. Abdomen broadly oval, the fourth segment long, the fifth nearly concealed; in color, shining black, with a bronze reflection; pile lutescent.

Six specimens, Texas. Two other specimens from Georgia are a little smaller, the third joint of the antennæ is a little shorter, and the abdomen is less metallic. The male has the face below the antennæ more concave, and the pile of the dorsum of the thorax more blackish across the middle. Very likely there are two species here.

CHILOSIA.

Chilosia hoodiensis.

Cartosyrphus hoodianus Bigot, Am. Soc. Ent. Fr., 1884, 552.

Habitat.—Oregon (Bigot).

♀. Length, 9mm. *Nigra, sparse fusco et cinereo tomentosâ. Antennis fulvis, cheto fusco, brevissimè tomentoso; facie nigro nitido, utrinque fusco tomentosa, fronte nigro villosa; oculis villosis; thorace scutelloque nitidis, fusco villosulis; calyptris ferè albidis, halteribus apice castaneis; abdomine nigro opaco, utrinque cinereo villosa, segmentis* 1, 4 *et* 5*is nitidis,* 2, *et* 3*is utrinque, basi, late nitidis; pedibus nigris, geniculis tibiarumque basi, fulvis; alis pallidè cinereis, basi maculâque stigmaticali infuscatis*—*G. Cheilosia*, propr. dict.

Antennes fauves, chète brun, très mèdiocrement tomenteux; face d'un noir luisant avec quelques poils bruns sur les côtés; front á poils noirs; yeux velus; thorax noir luisant, clairsemé de poils bruns; cuillerons blanchâtres, balanciers à massue brune; abdomen d'un noir mat, muni d'assez longs poils gris sur les côtés, 1er, 4e, et 5e segments luisants, 2e et 3e de chaque côté, une macule trigonale luisante; pieds nors, quelques poils clair semés gris, genoux, base des tibias étroitement fauves; ailes d'un gris très clair, plus foncées vers le bord externe, base, macule stigmatique, d'un roux pâle.—1 specim., Mount Hood. — Bigot, *l. c.*

I identify a male specimen from Mount Hood as this. The pile of the head and dorsum of the thorax is black. The fourth abdominal segment is shining metallic, like the anterior triangular spots on the second and third segments; the wings are very distinctly brownish in front; and I cannot distinguish any pubescence on the arista.

Chilosia lævis.

Cartosyrphus lævis Bigot, Ann. Soc. Ent. Fr., 1884, 553.

Habitat.—Washington Territory (Bigot).

♀. Length, 7mm. *Tota nigra, nitida, nuda. Cheto, facie oculisque nudis; calyptris albis, halteribus testaceis; alis pallidè testaceis.*

Entièrement d'un noir luisant, brièvement clairsemé d'un duvet grisâtre; chète, face, yeux, nus; cuillerons blancs, balanciers testacées; ailes un peu jaunâtres; quelques macrochètes noirs au bord de l'écusson.—1 specim. — Bigot, *l. c.*

Chilosia tristis.

I am wrong in uniting the male and female specimens described under *C. pallipes*. Notwithstanding the fact that specimens were collected together, almost indeed at the same moment, they belong, I believe, to different species. My reasons I find in the shape of the first posterior cell. In *C. tristis* (the males) it is broader, and the last section of the fourth vein comparatively longer than in *C. pallipes* (the females). The female of *C. tristis*, according to Loew, differs also, apparently, in not having the light-colored humeri.

SYRPHUS.

Syrphus fumipennis.

Syrphus fumipennis Thomson, Eugenies resa, 499.

Habitat.—California (Thomson).

♂. Length, 10^{mm}. Eyes bare, frontal triangle fuscous pilose, yellowish; face slightly concave below the antennæ, yellowish-white; cheeks bronze fuscous, subopaque; the lateral and front oral margin blackish, shining. Antennæ yellow. Thorax bronze fuscous, the sides more yellowish; pile pallid; scutellum pallid testaceous, with fuscous and pallid pile intermixed. Wings somewhat smoky. Abdomen oval, subdepressed; short, pallid pubescent; second segment deep black, long yellow pilose on the sides, with a yellow, triangularly oval spot on each side, the sides anteriorly confluent with the margin; third and fourth segments deep black, with a broad yellow posteriorly sinuate fascia; hind margin of the fourth and fifth segments testaceous; hypopygium shining black. Legs yellow, base of the femora black fuscous.

The above is an abstract of Thomson's very long and redundant Latin description. He says of the species, that is is very similar to *S. corollæ*, but differs in the smoky wings and abdominal bands. I cannot apply the description to any species which I know, though I think it comes nearest to *Americanus*. The legs are said to be black only at the base of the femora, and the bands of the third and fourth abdominal segments are not stated to reach the margin.

Syrphus ochrostoma.

Syrphus ochrostoma Zetterstedt, Dipt. Scand., viii, 3133; Schiner, Fauna Austr., i, 310; v. d. Wulp, Tijdschr. v. Ent., xxv, 134.

Habitat.—Europe, Canada (v. d. Wulp).

♂,♀. Length, 12^{mm}. Is like *S. ribesii*, but the scutellum is yellow pilose, and the femora are wholly yellow.

HELOPHILUS.

TABLE OF SPECIES.

1.—Face jutting forward into a cone 2
Face not conically produced forwards 3
2.—Face obtusely conic . . . . . hamatus
Face sharply conical . . . . . conostomus
3.—Sixth longitudinal vein distinctly sinuous 4
Sixth vein nearly straight or only gently curved 7
4.—Dark colored species 5
Light colored species; stripes of thorax distinct 6
5.—Southwestern species . . . . . mexicanus
Northern species . . . . . glacialis, grœnlandicus, borealis
6.—Front of female black pilose; front of male narrow above . . . . . similis
Front of female black pilose only near the ocelli; front of male broad . latifrons
7.—Antennæ reddish yellow 11
Antennæ dark 8
8.—Third joint of antennæ pitchy or more or less reddish 9
Antennæ wholly black 10
9.—Abdomen with yellow bands . . . . . obscurus
Abdomen velvet-like black, each segment with a tringular black shining spot in the middle, and a hoary spot on each side . . . . . porcus
10.—Abdomen with light colored bands . . . . . Novæ Scotiæ
Abdomen wholly black . . . . . modestus
11.—Abdomen elongate, cylindrical in the male 12
Abdomen oval; face yellow 13
12.—Hind coxæ of the male with a stout process below . . . . . chrysostomus
Hind coxæ of the male not with a stout process . . . . . distinctus
13.—Dorsum of thorax with two slender obsolete luteous pollinose stripes . obsoletus
Dorsum with distinct light colored stripes 14
14.—Abdomen distinctly banded . . . . . integer, lætus, divisus, ? flavifacies
Third segment, except a small opaque spot in front, and the fourth, shining submetallic black . . . . . bilinearis

Helophilus bilinearis, n. sp.

Habitat.—Colorado!

♂. Length, 9mm. Head in profile similar to that of *H. lætus*, the angle of the cheeks with the occiput a little more obtuse. Face yellowish white, clothed with white pollen and pile; cheeks shining black. Antennæ reddish yellow; arista luteous. Lower part of the front like the face, on the upper part brownish black with black pile; the pile of the vertex light colored. Thorax opaque black; two median, remote, linear stripes, cinereous, the lateral margins ochraceous cinereous; pile yellowish white. Scutellum obscurely yellow, the narrow base and inter angles black; pile wholly light colored. Abdomen elongate oval, broadest on the second segment; first segment shining, dusted on the

sides; second segment opaque black, on the lateral margins an elongate yellow spot, its inner margin shining beneath cinereous pollen which extends acutely inward near the middle; third segment with a small hourglass-shaped opaque spot, on each side of which faintly whitish dusted, the extreme anterior angles luteous; fourth segment luteous on the hind border; the rather broad posterior part of the second, and the third and fourth, shining, somewhat metallic, black; pile on the sides in front long, nearly white, elsewhere shorter, but of nearly the same color. Legs black, hind femora on outer half and the hind tibiæ, except two indefinite darker rings, red; tip of four anterior femora, their tibiæ and middle tarsi, luteous yellow; tip of front tibiæ and the front tarsi, brown. Wings cinereous hyaline; stigma minutely brown.

One specimen, Colorado.

CRIORHINA.

Criorhina pictipes.

Callipyrobola pictipes Bigot, Ann. Soc. Ent. Fr., 1883, 354.

? *Criorhina notata* (Wiedemann), ante. p. 215.

Habitat—Carolina (Bigot).

♂. Long. 8 et 10^{mm}. *Antennis testaceis, supernè et apice fusco tinctis; palpis fuscis; facie, fronte conice elongatâ, flavo pallido; thorace, scutello et abdomine nigro œnescente, fulvo tomentosis, scapulis, vitta thoracica laterali marginibusque scutelli fulvis, incisuris abdominis, angustissime, maculisque duobus, basi, subtrigonis, fulvis; calyptris et halteribus pallide flavis; femoribus flavidis, nigro annulatis, tibiis anticis fuscis, basi flavidis tarsis anticis infuscatis, tibiis intermediis flavis tarsis apice fuscis, tibiis posticis flavidis, apice latè fusco annulatis tarsis flavidis; [alis hyalinis] basi et extrinsecus flavidioribus, venis transversis parum infuscatis.* ♀. *Simillima; fronte, supernè, late nigra.*

♂. Antennes testacées, brunes en dessus et à l'extrémité du 3^{e} segment, chète testacé, nu, à pointe brunâtre; palpes brunes; face, front, conique et notablement saillant, d'un blanc jaunâtre. Entièrement d'un noir bronzé à légers reflets cuivreux et duvet fauve, flancs, sous les ailes, avec une forte touffe de poils jaunâtres; thorax à partir de la suture, écusson, bordés de fauve, épaules fauves, métathorax, sous l'écusson d'un noir luisant, 2^{e} segment abdominal orné en dessus, à sa base, de deux macules presque trigonales, alongées, fauves, segments très finement bordés de fauve, l'abdomen moins tomenteux que le thorax; cuillerons et balanciers d'un jaunâtre pâle; hanches noirâtres, pieds d'un jaunâtre pâle, cuisses avec un anneau noir vers leur extrémité, tibias antérieurs à l'extrémité et tarses entièrement bruns, de même que les tarses postérieurs, tibias postérieurs largement brunâtres à leur extrémité, tibias et tarses intermédiaires d'un jaunâtre pâle, ces derniers noirâtres à l'extrémité; ailes d'un jaunâtre fort pâle, un peu plus foncé à la base et le long du bord externe, nervures transversales légèrement bordées de noirâtre. ♀. Semblable au mâle, front large et d'un noir

assez luisant à sa partie supérieure; cuisses postérieures simplement garnies en dessous de poils fins, peu rigides; 2e nervure transversale de l'aile très légèrement oblique et sise au milieu de cellule discoïdale.—2 spécim.—Bigot, *l. c.*

BRACHYPALPUS.

Brachypalpus Amithaon.

Milesia Amithaon Walker, List, etc., iii, 567.

Habitat.—North Carolina (Walker).

"♂. Body black, shining; head as broad as the chest, clothed with dark tawny hairs; mouth and feelers black; eyes brassy black; facets on the fore part of the crown rather larger than those elsewhere; chest clothed with dark tawny hairs; abdomen nearly linear, as broad as the chest and much longer; sides clothed alternately with black and dark tawny hairs; legs black, clothed with black hairs; foot-cushions and claws dark tawny; tips of claws black; hind thighs very thick, toothed beneath; hind shanks curved, with a knob on the inner side; wings dark gray, brown along the fore borders and on the sides of the veins of the disk; wing-ribs and veins black, some of the latter ferruginous toward the base; poisers ferruginous. Length of the body 7 lines; of the wings 15 lines."—Walker, l. c.

"*M. Amithaon*, which I saw in the British museum, looks very much like a *Brachypalpus*."—Osten Sacken, Cat. Dipt., 251. The description reads much like *B. frontosus*, except the "black and dark tawny hairs" of the abdomen. Is it a *Crioprora*?

Brachypalpus Aepalius.

Xylota Aepalius Walker, List, etc., iii, 557.

? *Brachypalpus sorosis* Williston, ante, p. 223.

I neglected to compare Walker's description in describing my species, and only became aware of the apparent identity of his *Aepalius* in revising the description for insertion here. I believe they are the same, though the description is not very definite of the abdomen and pile of the thorax, and will apply equally well to *B. pulcher*.

OBSERVATIONS ON THE GENERA AND SPECIES DESCRIBED BY MR. BIGOT.

(Annales et Bulletin Soc. Ent. de France, 1883, 84, 85).

Phalacromyia vicina, Annales, 1883, 86.—Mexico.

Phalacromyia melanorhina, Annales, 1883, 86.—Mexico.

This genus differs from *Volucella* only in the marginal cell of the wings being open. Mr. Bigot gives a useful table of the known species of this genus and of *Volucella*.

Microdon gracile, Annales, 1883, 320.—Mexico.

Is not this the same as *M. baliopterus*? The descriptions read very much alike.

Microdon cothurnatum, Annales, 1883, 320.—Oregon.

Is *M. tristis*, var.

Chrysotoxum villosulum, Annales, 1883, 330.—Oregon.

I make this a synonym of what I call *O. derivatum* Walker, but it is possible that I have included more than one species under that name.

Ocyptamus fraternus, Annales, 1883, 324.—Mexico.

This is, according to the author, allied to *O. funebris* Macq. Schiner (Nov. Exped., 346), was not able to decide whether this species differed from *O. fascipennis* or not. Bigot's description of the wings has hardly anything in common with the latter.

Ocyptamus infuscatus, Annales, 1883, 324.—Mexico.

Is apparently allied to *O. latiusculus* Loew.

Ocyptamus rubriventris, Annales, 325.—Mexico.

Appears to be similar to *O. dimidiatus* Fabr.

Spazigaster bacchoides, Annales, 1883, 326.—California.

This is the same as *Baccha babista* Walker, which is widely distributed over the whole United States. The author places it in this genus on account of the oval third antennal joint. The arista is not plumose, and the hind tibiæ of the male are not bent, characters that are given for *Spatigaster*. However, I have never seen a specimen of this European genus, and cannot give any opinion as to the justness of Mr. Bigot's determination.

Ascia nasuta, Annales, 1883, 327.—Mount Hood.

Ascia quadrinotata, Annales, 1883, 327.—Mount Hood.

Ascia albipes, Annales, 1883, 328.—North America.

All of these, I believe, are only varieties of the common, widespread *Neoascia globosa* Walker.

Salpingogaster anchorata, Annales, 1883, 328.—Mexico.

Salpingogaster cothurnata, Annales, 1883, 329.—Mexico.

The genus *Salpingogaster* Schiner was described by the author as follows (Nov. Exped., 344):

"Auss der Gruppe der Syrphinen.—Kopf, Rückenschild und Hinterleib wie bei der Gattung *Bacha*, nur ist der letztere immer und in beiden Geschlechtern an der Basis sehr dünn, fast drehrund, vom zweiten Ringe an aber ungewöhnlich stark verbreitet und flachgedrückt, so dass er im Umrisse stark keulenförmig erscheint; gegen das Ende zu ist er sanft zugespitzt; die Genitalien des Männchens ragen vor und zeigen bei einer Art am Ende einen aufgebogenen Dorn. An den ziemlich langen Beinen sind die Hinterschenkel in der Regel gedornt, die Dornen aber klein; Vordertarsen des Weibchens breitgedrückt. Flügel gross; die Cubitalader [third longitudinal vein] ober der ersten Hinterrandzelle tief buchtig eingebogen (eben so stark wie bei *Eris*-
[illegible]er letzte Abschnitt der Discoidalader (die sogenannte Spitzen-
[illegible][last section of the fourth vein] sehr stark S-förmig geboge[illegible];
[illegible] Querader nahe vor der Mitte oder auf der Mitte der Dis-

...ng; die Radialzelle [marginal cell] offen. Typ- ...*gaster pygophora* Schiner."—South America (14 to

...nales, 1883, 330.—Cuba.

... is a true *Doros* (*i. e.*, differing from *Xanthogramma* in ...being clubbed, or the basal segments narrow) or not, can- ...out from the description.

...pulentus, Annales, 1883, 336.—Cuba.

...pecies here described appears to be closely allied to those placed *Pteroptila* (*Plagiocera*).

...axea fulvifrons, Annales, 1883, 341.—Georgia.

Notwithstanding the discrepancies in the description, there can be little or no doubt but that this is the widespread, common, and easily recognized *Milesia ornata*.

Lepicomyia cincta, Annales, 1883, 345.—Mexico.

To what genus this belongs I cannot say. The author was in uncertainty about *Lepidomyia*, for which he had grounds, as Loew's very brief diagnosis does not convey a very good idea of the genus. Bigot's species is, however, evidently no *Lepromyia*. The pilosity of the eyes and the light color of the scutellum indicate that it belongs somewhere in the vicinity of *Chilosia*.

Asemosyrphus oculiferus, Annales, 1883, 350.—Mexico, California.

Asemosyrphus nigroscutatus, Annales, 1883, 351.—Mexico.

The latter species the author separated on unimportant differences, and thought might be only a variety of *A. oculiferus*, a view in which I concur. They are both synonyms of *Helophilus Mexicanus*, which will be readily enough seen by comparing the description with male, not female, specimens.

Asemosyrphus flavicaudatus, Annales, 1883, 351.—Mexico.

Asemosyrphus bicolor, Annales, 1883, 350.—Mexico.

Whether these species belong to a genus distinct from *Helophilus* or not I cannot say.

Calliprobola ærea, Annales, 1883, 352.—Washington Territory.

Is a synonym of *Brachypalpus* (*Calliprobola*) *pulcher*.

Calliprobola calorhina, Annales, 1883, 353.—Washington Territory.

There is scarcely any doubt but that this is the same as *Sphecomyia Pattoni*. It has scarcely anything in common with the preceding species.

Calliprobola pictipes, Annales, 1883, 354.—Carolina.

See *Criorhina pictipes* above.

Brachypalpus Morrisoni, Annales, 1883, 355.—Washington Territory.

This is my *Pocota grandis*, described first as *Hadromyia grandis*. The author may be right in locating it under *Brachypalpus*, but the

very broad abdomen differs much from that of the type of that genus. The palpi, moreover, are elongate.

Romaleosyrphus villosus, Annales, 1883, 356.—Mexico.

This genus, of which this is the type species, is evidently very closely allied to *Crioprora*, and probably identical. The only part of the generic diagnosis which I do not understand is, "*facie * * superne valde * * callosa.*" The face in none of the species known to me has a callosity above, without the slight convexity below the antennæ is meant. The elongate palpi, the conically produced, concave in profile, face, the antennæ, the villosity, and the structure of the hind legs throughout, are characteristic of *Crioprora*. The species seems to be different from any previously described, especially distinctive in its large size (22mm).

Ischyrosyrphus tricolor, Annales, 1884, 73.—California.

I identify this as *Syrphus velutinus*. The genus *Ischyrosyrphus* is separated from *Syrphus* solely by the pilosity of the eyes and is wholly untenable. See remarks under *Catabomba*.

Syrphus perpallidus, Annales, 1884, 90.—North America.

This is the very common Western *Eupeodes volucris* O. S.

Mesograpta ? bicincta, Annales, 1884, 112.—Mexico.

Mesograpta ? bistriga, Annales, 1884, 110.—Mexico.

Mesograpta ? circumdata, Annales, 1884, 107.—Mexico.

Mesograpta ? cuprina, Annales, 1884, 114.—Cuba.

Mesograpta ? heraldica, Annales, 1884, 109.—Mexico.

Mesograpta ? lacrymosa, Annales, 1884, 108.—Mexico, Brazil.

Mesograpta ? maculata, Annales, 1884, 111.—Mexico, Cuba, Brazil.

Mesograpta ? mu, Annales, 1884, 105.—Mexico.

Mesograpta ? pallipes, Annales, 1884, 106.—Mexico.

Mesograpta ? saphiridiceps, 1884, 105.—Mexico.

Mesograpta ? trilobata, Annales, 1884, 109.—Mexico.

It is to be regretted that Mr. Bigot should have thought fit to describe all these new species, while not sure of their generic location. He must certainly have misunderstood the genus, as its distinctive character, a median dorsal cinereous line, is usually easily apparent, and dissipates all doubt as to the affinities of the insects. That he has not rightly conceived the limits of the genus seems also certain from the fact that he has described species from New Caledonia, and it may safely be asserted that the genus is distinctively an American one. Other reasons make this addition of numerous new and imperfectly described or doubtful species unfortunate. Not a few *Syrphi* of the older authors are probably *Mesograptæ*, but whose distinctive characters cannot be made out till the widely distributed species are recognized from South America. Again there is a great variation among individuals, and single or even a few specimens are often insufficient to decide the variational limits. Furthermore, differences, or at least a

tabular synopsis, should have been given. It is very much to be feared that Mr. Bigot's long interrogational list will remain an incumbrance to Mexican dipterology.

Myiolepta lunulata, Annales, 1884, 537.—Oregon.

Is the same as *M. varipes* Loew.

Brachyopa cinereovittata, Annales, 1884, 537.

This seems to be *B. vacua*, but the description of the thorax does not agree well.

Paragus auricaudatus, Annales, 1884, 540.—California.

This I identify with the common European *P. tibialis*.

Xylota rubiginigaster, Annales, 1884, 543.—Colorado.

I have immature specimens of *X. pigra* to which this description will apply fairly well.

Xylota annulifera, Annales, 1884, 545.—North America.

I do not see wherein this species differs from the common *X. ejuncida* Say.

Xylota satanica, Annales, 1884, 546.—California.

This description applies to *X. curvipes* except that the black of the tip of the hind femora is not mentioned. Possibly it is distinct.

Glaurotricha (Haurotricha) volucelloides, Annales, 1884, 548.—Mexico.

The author is in doubt whether to call this a *Glaurotricha* or a *Phalacromyia*. The genus corresponds to *Temnocera*, but with the marginal cell open as in *Phalacromyia*.

Cartosyrphus lamprurus, Annales, 1884, 552.—North America.

This is evidently *Chilosia capillata* Loew.

Cartosyrphus hoodianus, Annales, 1884, 552.—Mount Hood.

See *Chilosia hoodiensis* above.

Cartosyrphus infumatus, Annales, 1884, 553.—Mount Hood.

Is the same as *Chilosia nigripennis*.

Cartosyrphus lævis, Annales, 1884, 553.—Washington Territory.

See *Chilosia lævis* above.

The genus *Cartosyrphus* was characterized by the author as follows: "*Generis Chilosiæ veteris simillimum; differt, cheto et oculis glabris.*"

Melanogaster rufipes, Annales, 1884, 555.—North America.

I am unable to locate this species any more definitely than the author has done. The author's conception of the genus will be ascertained from the following, from his tabular synopsis of the genera of Syrphidæ (Ann. Soc. Ent. Fr., 1883, 258):

"Face dépourvue de sillons lateraux; antennes, 3e segment de grande dimension, orbiculaire: ♂, yeux contigus. *Cartosyrphus.* Id., ♀, pourvue de sillons lateraux; antennes, 3e segment de mediocre dimension. *Melanogaster.*"

It will thus be seen that, in the acceptation of the present work, species is a *Chilosia*. His description is as follows:

♂, ♀. Long. 8mm. *Nigra, ferè nuda. Facie, thorace, scutelloque ob œnescentibus, parcè cinereo villosulis. Antennarum segmentis [secund [tertiis], basi, fulvo obscuro tinctis; pedibus anticis fulvis, femoribus tarsis apice, nigris, posticis, femoribus ferè totis, annulo tibiarum, t totis, ejusdem coloris; alis hyalinis.*

Noire, clairsemé de poils grisâtres. Face, thorax, écusson, 1er ment de l'abdomen, luisants avec reflets bronzés; antennes fa noirâtres à la base ainsi qu'au-dessus du 3e segment; face, avec stries obliques très peu visibles de chaque côte, légèrement carén tuberculée, non concave; flancs avec un peu de duvet blanc; cuill et balanciers blancs, massue brune; abdomen d'un noir opaque avec larges macules latérales et basilaires d'un fauve obscur sur les 3e segments; pieds fauves, intermédiaires et antérieurs avec la bas cuisses et l'extrémité des tarses noirâtres, postérieurs avec les cu presque entièrement noirâtres, un large anneau sur les tibias, les t entièrement noirâtres; ailes hyalines, la macule stigmatique ét d'un jaunâtre pâle. Antennes, 3e segment ovaloïde allongé; ail nervure longitudinale (Rondani) conformé comme chez la précé espèce.—2 specim.

The "preceding species" (*Chrysogaster ? notata* from New Zea has the distal section of the fourth vein "oblique après le coude, courbé de manière à former un angle presque droit, brièvement a diculée après le coude." Is it a *Melanostoma ?*

Melanogaster ochripes, Annales, 1884, 555.—Mount Hood.

Is a synonym of *Chilosia par va.*

Orthoneura sinuosa, Annales, 1884, 556.—Washington Territory.

Is *Chrysogaster stigmata ?*

Melanostoma cyanecincta, Annales, 1885, 251.—Mexico.
Ocyptamus fenestratus, Annales, 1885, 251.—Mexico.
Eristalis rufoscutatus, Annales, 1880, 221.—Mexico.

EXPLANATION OF PLATES.

[All the figures are from nature, by the author.]

PLATE I.

1. MICRODON FUSCIPENNIS Macq., 1*a*, hind leg of male.
2. MICRODON BALIOPTERUS Loew?, head of male.
3. MICRODON TRISTIS Loew, wing; 3*a*, hind leg.
4. MICRODON GLOBOSUS Fabr., head of male.
5. CHRYSOTOXUM DERIVATUM Walker, wing; 5*a*, head of male; 5*b*, hind leg; 5*c*, antennæ of four different individuals.
6. CHRYSOTOXUM, sp. (PUBESCENS?).
7. PARAGUS BICOLOR Fabr., head of female.
8. PARAGUS TIBIALIS Fallen, head of female.
9. PARAGUS BICOLOR Fabr., wing.
10. NAUSIGASTER PUNCTULATA Will., male; 10*a*, wing, var.

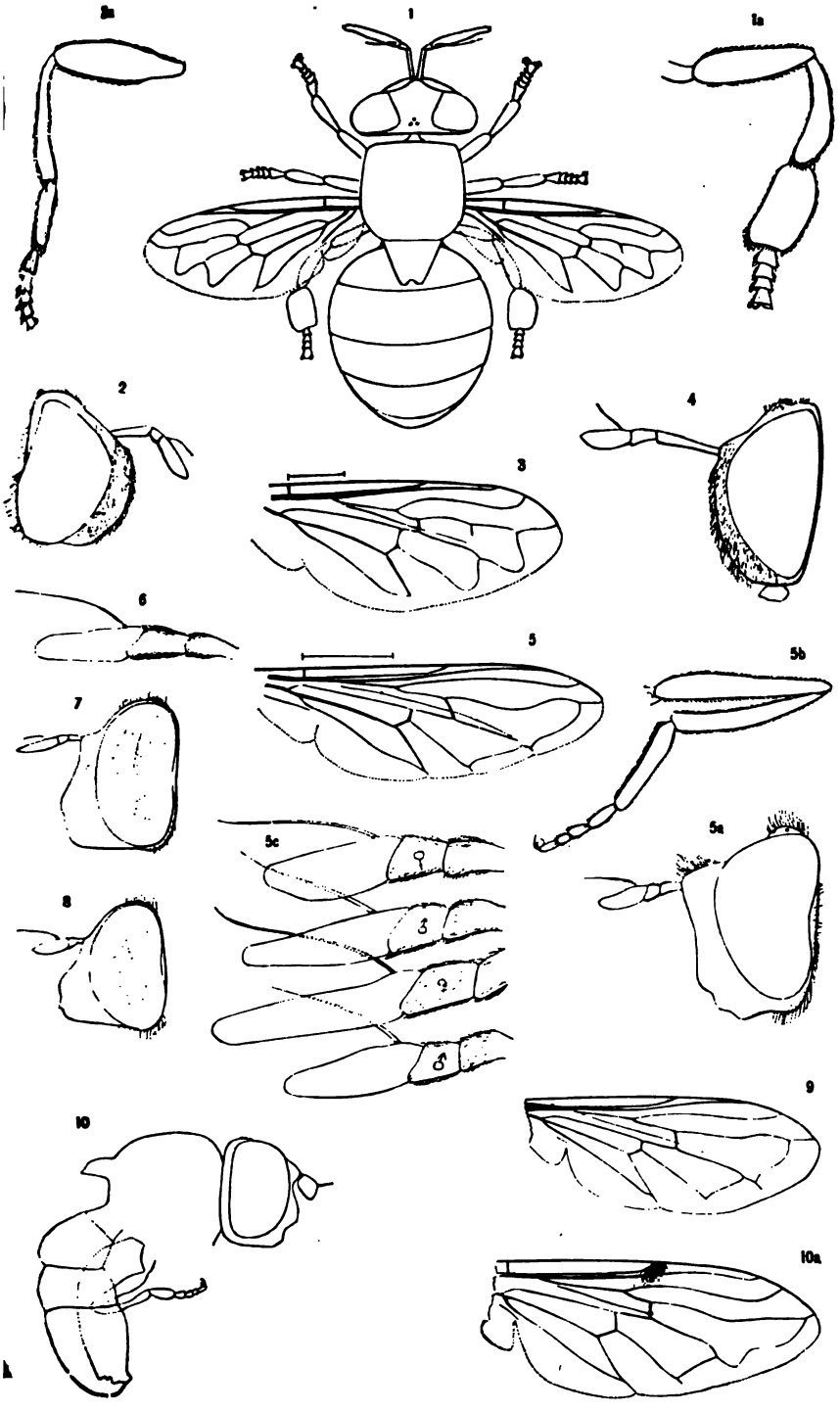
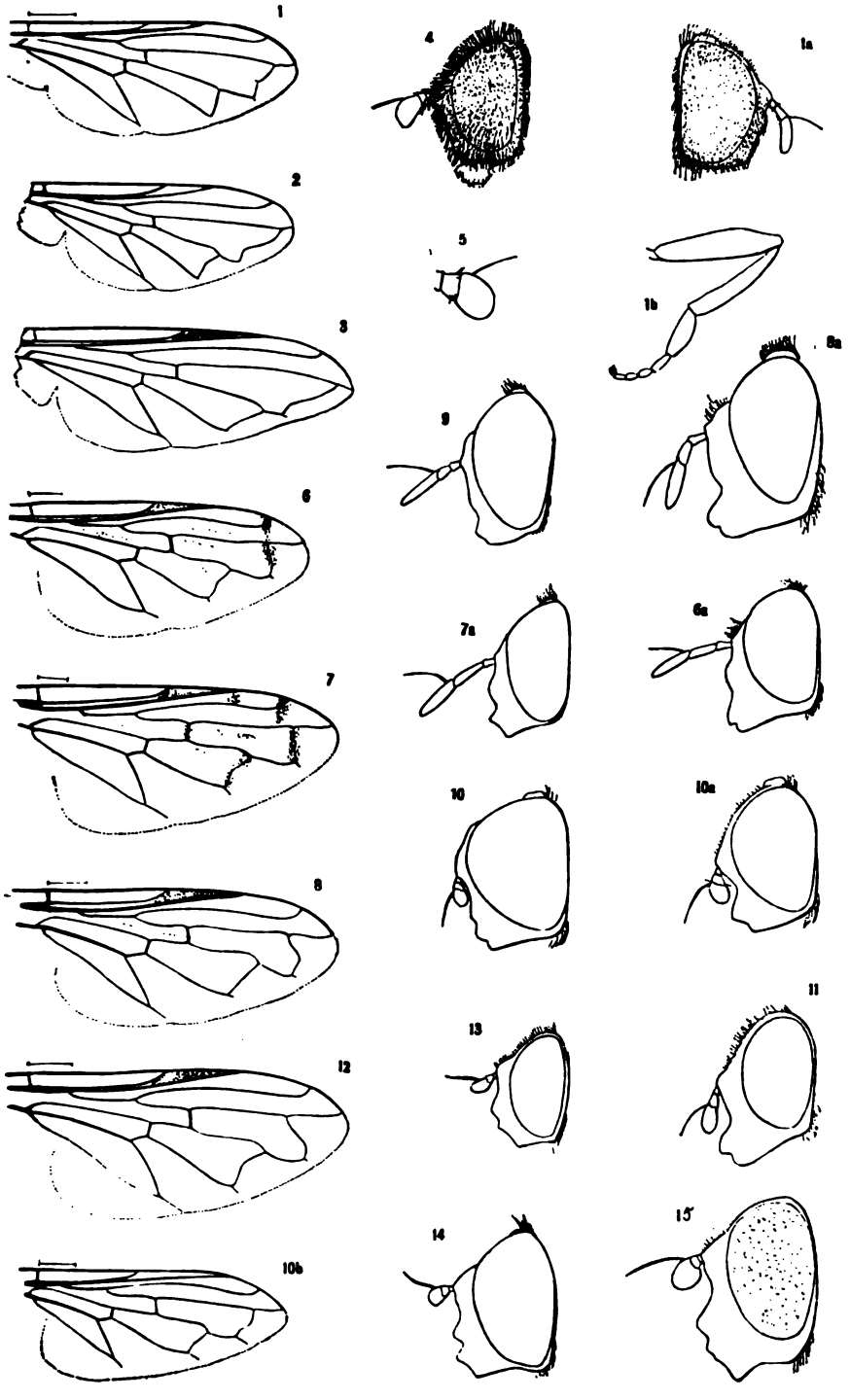

1a
1
2
3
4
5
5a
5b
5c
6
7
8
9
10
10a

PLATE II.

1. PIPIZA PULCHELLA Will., wing; 1*a*, head of female; 1*b*, hind leg.
2. PIPIZA PISTICA Will., wing.
3. PIPIZA PUELLA Will., wing.
4. PIPIZA FESTIVA Meigen, head of female.
5. PIPIZA PISTICOIDES Will., antenna.
6. CHRYSOGASTER BELLULA Will., wing; 6*a*, head of male (the convexity of the face is a little too great).
7. CHRYSOGASTER NITIDA Wied., wing; 7*a*, head of male.
8. CHRYSOGASTER NIGROVITTATA Loew, wing.

8*a*. CHRYSOGASTER STIGMATA Will., head of male.

9. CHRYSOGASTER PULCHELLA, Will., head of male.
10. CHRYSOGASTER NIGRIPES Loew, head of male; 10*a*, head of female; 10*b*, wing.
11. CHRYSOGASTER NIGROVITTATA Loew, head of female.
12. CHRYSOGASTER STIGMATA Will., wing.
13. CHILOSIA PARVA Will., head of female.
14. CHILOSIA NIGRIPENNIS Will., head of male.
15. CHILOSIA PETULCA Will., head of female (the lower border of the cheeks descends too much in front).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7a
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13
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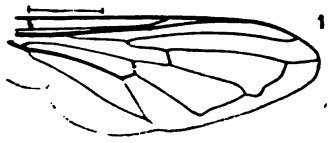
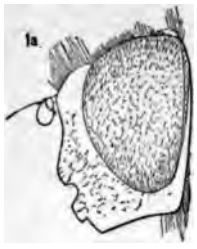
1a
1b
8a
6a
10a
11
15

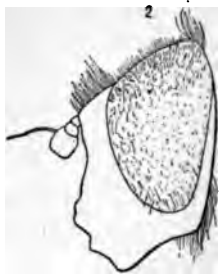
PLATE III.

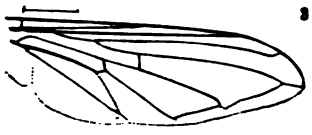
1. CHILOSIA OCCIDENTALIS Will., wing; 1*a*, head of male.
2. CHILOSIA LASIOPHTHALMA Will., head of male.
3. CHILOSIA CYANESCENS Loew, wing.
4. CHILOSIA PLUMATA (CYANESCENS) Loew, head of female.
5. CHILOSIA TRISTIS Loew, head of male (Washington specimen).
6. LEUCOZONA LUCORUM Linné, wing; 6*a*, head of male.
7. MELANOSTOMA ANGUSTATUM Will., head of male.
8. MELANOSTOMA TIGRINUM O. S., head of male.
9. MELANOSTOMA MELLINUM Linné, head of male.
10. PLATYCHIRUS QUADRATUS Say, head of male; 10*a*, right front tibia and tarsus of male.
11. PLATYCHIRUS PELTATUS Meig., head of male; 11*a*, left front tibia and tarsus of male.
12. PLATYCHIRUS HYPERBOREUS Staeger, right front tibia and tarsus of male.
13. PYROPHÆNA OCYMI Fabr., abdomen of female; 13*a*, right front tibia and tarsus of male; 13*b*, left middle tibia and tarsus of male; 13*c*, wing.
14. EUPEODES VOLUCRIS O. S., abdomen of male; 14*a*, hypopygium.

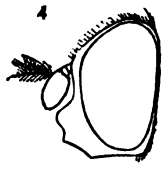
PLATE III.

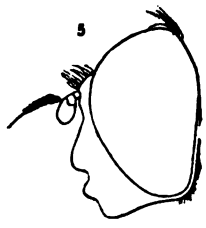


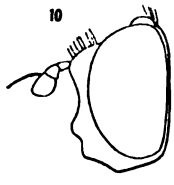


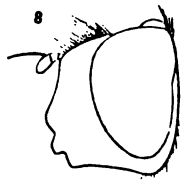


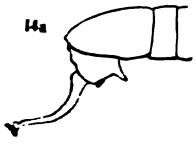


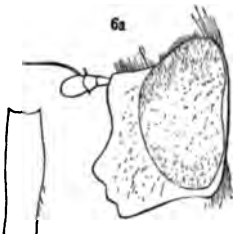


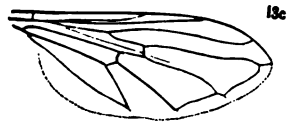












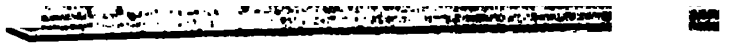


PLATE IV.

1. CATABOMBA PYRASTRI Linné, head of male, from in front; 1*a*, head of female.
2. SYRPHUS LESUEURII Macq., wing.
3. SYRPHUS GENICULATUS Macq., head of male.
4. DIDEA LAXA O. S., wing; 4*a*, head of male.
5. MESOGRAPTA GEMINATA Say, head of male; 5*a*, hind leg of male.
6. XANTHOGRAMMA ÆQUALE Loew, head of female.
7. BACCHA AURINOTA Walker, wing.
8. BACCHA FUSCIPENNIS Say, head of male; 8*a*, the same, front view.
9. BACCHA BABISTA Walk., head of female.
10. NEOASCIA GLOBOSA Walk., wing; 10*a*, head of male.
11. SPHEGINA KEENIANA Will., wing.
12. SPHEGINA INFUSCATA Loew, wing; 12*a*, head of male.
13. PELECOCERA PERGRANDEI Will., male.
14. CHALCOMYIA ÆREA Loew, head of male; 14*a*, head of female.
15. MYIOLEPTA NIGRA Loew, head of female.
16. SPHÆROPHORIA CYLINDRICA Say, head of male; 16*a*, abdomen of male.

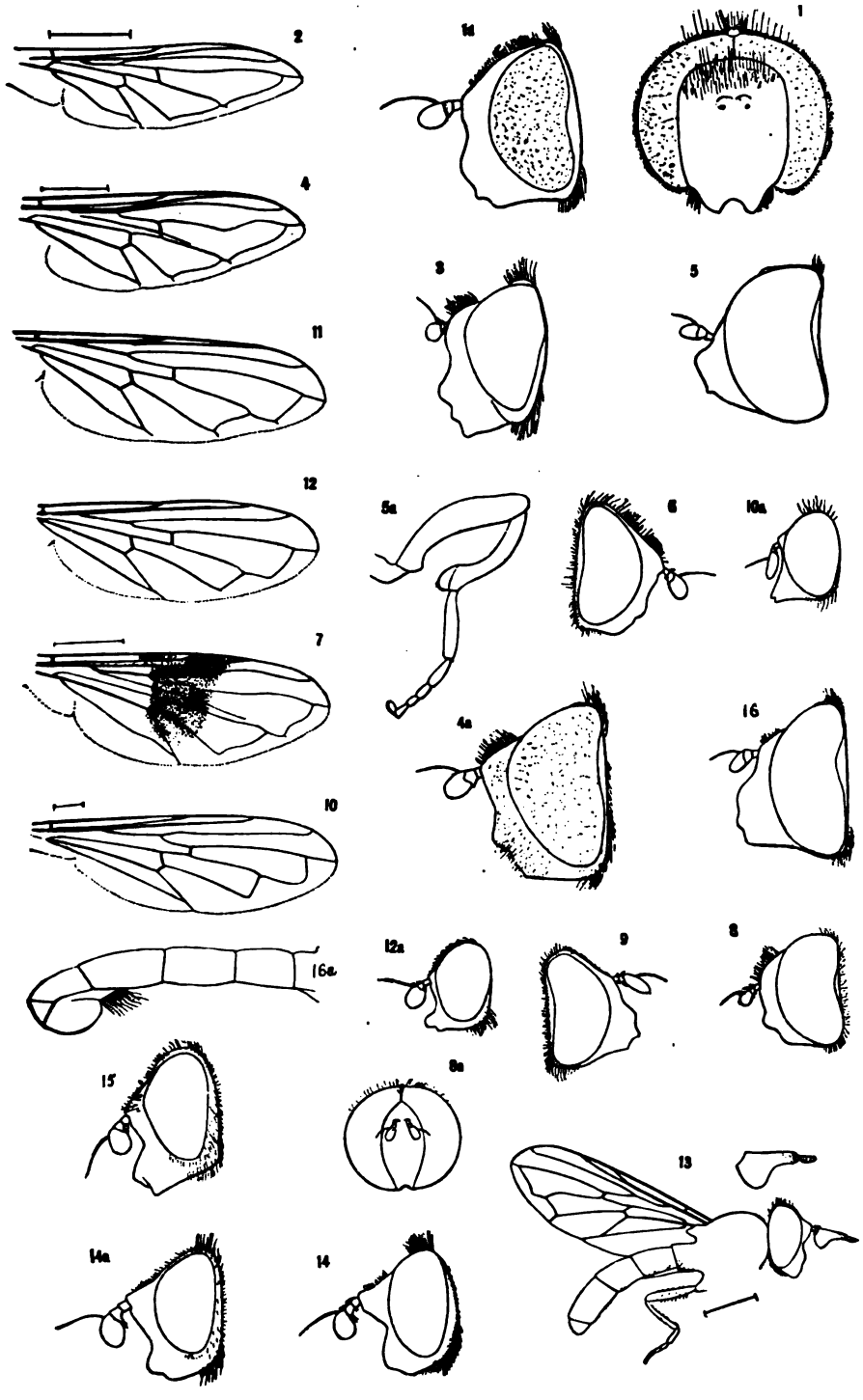

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PLATE V.

1. MYIOLEPTA VARIPES Loew, wing; 1*a*, head of male; 1*b*, head of female.
2. MYIOLEPTA BELLA Will., head of female; 2*a*, wing.
3. RHINGIA NASICA Say, head of male; 3*a*, wing.
4. EUGENIAMYIA FERRUGINEA Fallen, wing; 4*a*, head of male; 4*b*, the same, front view.
5. BRACHYOPA NOTATA O. S., wing; 5*a*, head of female.
6. BRACHYOPA NOTATA O. S., head of male.
7. BRACHYOPA MEDIA Will., head of female.
8. VOLUCELLA HAGII Jænn., head of male.
9. VOLUCELLA OBESA Fabr., head of male.
10. BACCHA DIMIDIATA Fabr., wing, female.

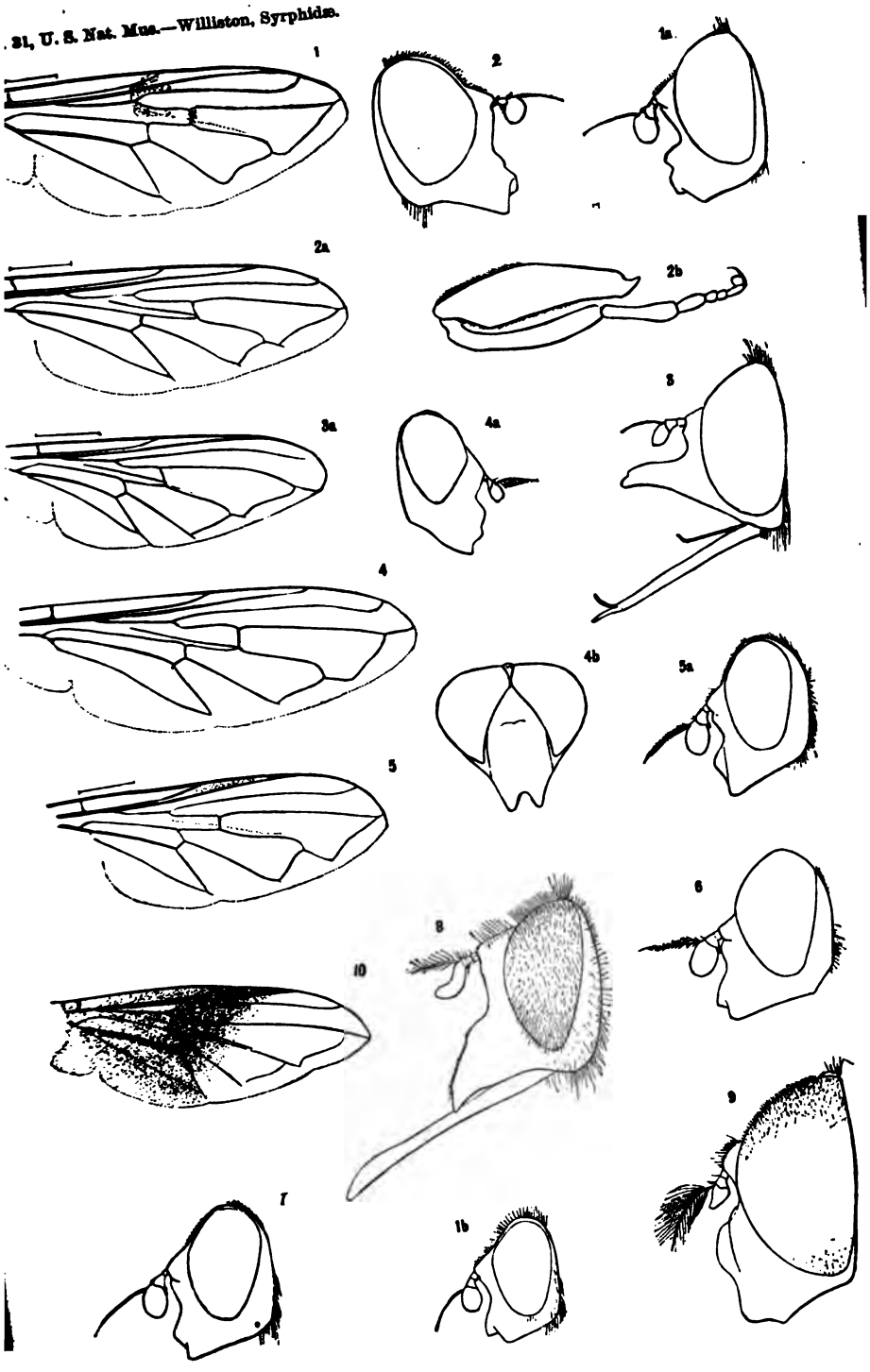
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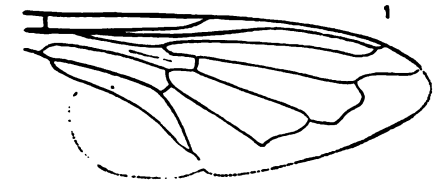
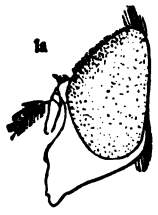
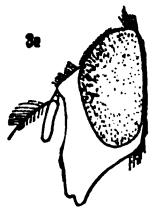
PLATE VI.

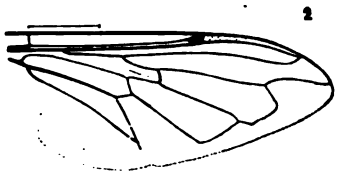
1. VOLUCELLA VESICULOSA Fabr., wing; 1*a*, head of male.
2. VOLUCELLA SEXPUNCTATA Loew, wing.
3. VOLUCELLA PUSILLA Macq., wing; 3*a*, head.
4. VOLUCELLA FASCIATA Macq., wing.
5. VOLUCELLA MEXICANA Macq., wing; 5*a*, head of male.
6. VOLUCELLA EVECTA Walk., wing; 6*a*, head of male.
7. VOLUCELLA, sp.
8. VOLUCELLA sp., head of male.
9. VOLUCELLA COMSTOCKI Will., head of male.
10. VOLUCELLA EUGENIA Will., head of male.
11. VOLUCELLA SEXPUNCTATA Loew.
12. VOLUCELLA SATUR O. S., wing neuration; 12*b*, antenna.
13. VOLUCELLA TAU Bigot, antenna.

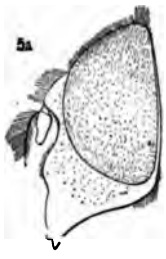
PLATE VI.

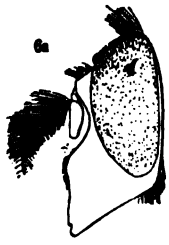


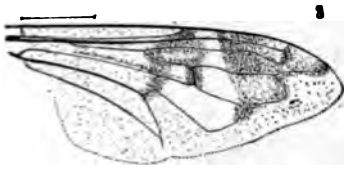


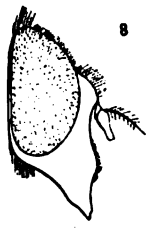


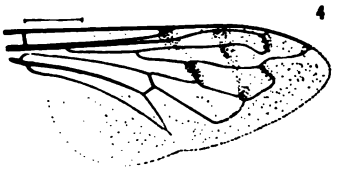


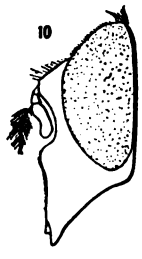


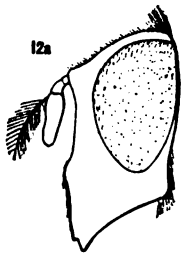


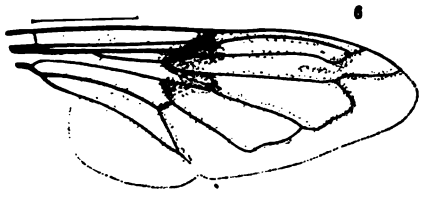


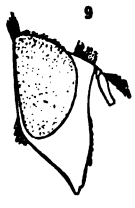


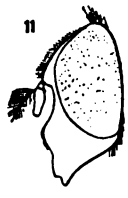


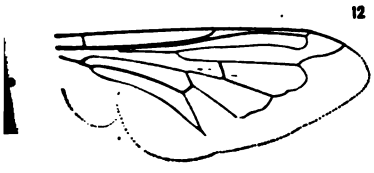












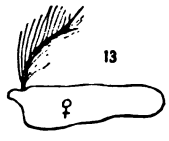


PLATE VII.

1. COPESTYLUM MARGINATUM Say, wing; 1*a*, head of female; 1*b*, antenna.
2. SERICOMYIA CHALCOPYGA Loew, wing; 2*a*, head of male.
3. SERICOMYIA MILITARIS Walker, wing; 3*a*, hind leg of male; 3*b*, head of male.
4. SERICOMYIA CHRYSOTOXOIDES Macq., antenna of male; 4*a*, antenna of female.
5. ARCTOPHILA FLAGRANS O. S., wing; 5*a*, head of male; 5*b*, hind leg of male.
6. TEUCHOCNEMIS BACUNTIUS Walk., wing.
7. ERISTALIS TENAX Linné, wing; 7*a*, head of male; 7*b*, antenna; 7*c*, hind leg of male.
8. ERISTALIS TRANSVERSUS Wied., head of male.
8*a*. ERISTALIS VINETORUM Wied., hind leg of male.
9. ERISTALIS COMPACTUS Walker, head of female.
10. ERISTALIS HORTORUM Fabr, wing.

PLATE VII.

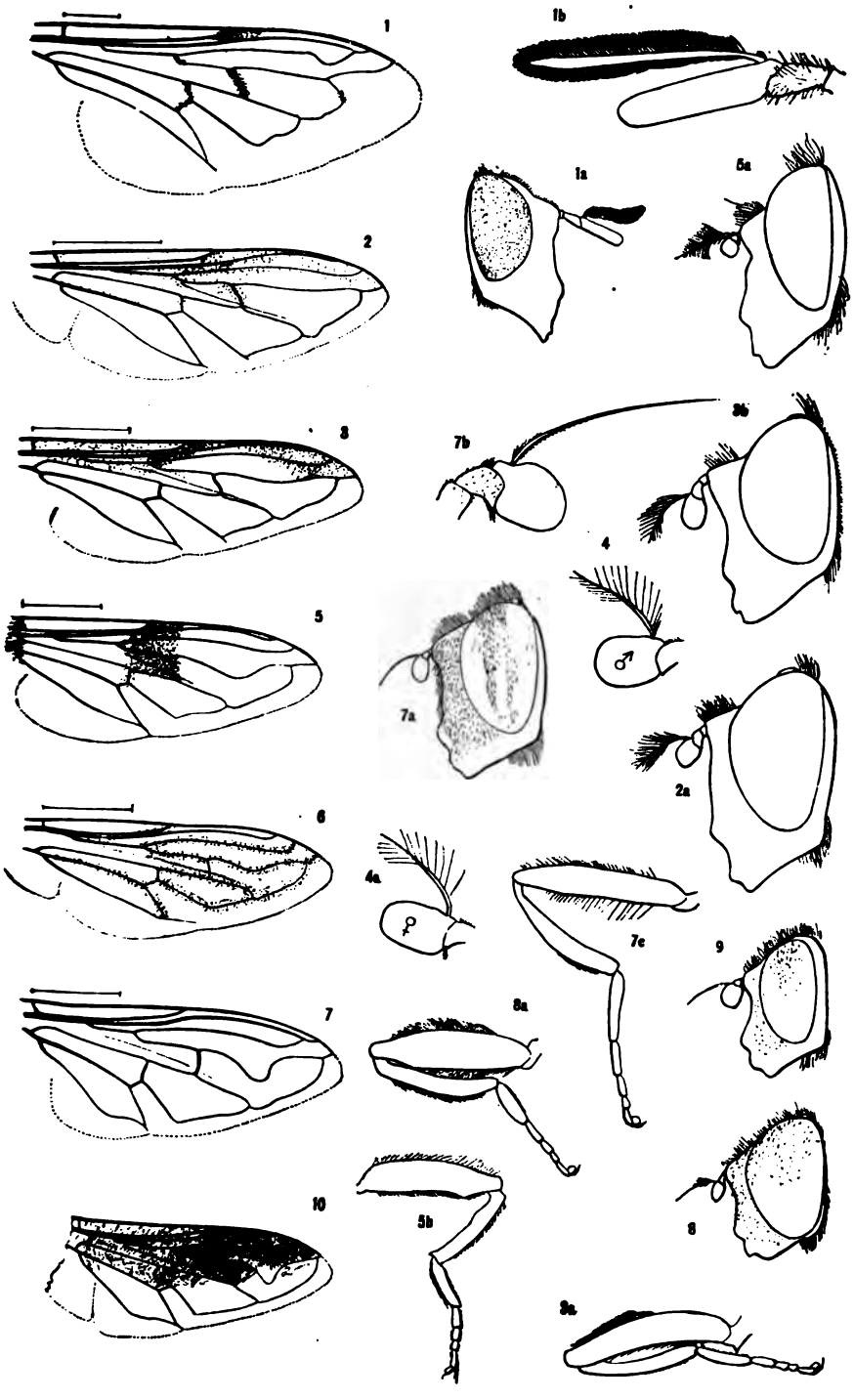


PLATE VIII.

1. PTEROPTILA CRUCIGERA Wied., wing; 1*a*, distal end of male abdomen; 1*b*, hind leg of male; 1*c*, head of male.
2. HELOPHILUS SIMILIS Macq., wing.
3. HELOPHILUS CONOSTOMUS Will., head of female; 3*a*, wing.
4. HELOPHILUS MODESTUS Will., head of female.
5. HELOPHILUS CHRYSOSTOMUS Wied., hind leg of male.
6. HELOPHILUS LÆTUS Loew, head of male.
7. HELOPHILUS MEXICANUS Macq., head of male; 7*b*, the same, front view.
8. DOLIOSYRPHUS RILEYI Will., head of male.
9. PTERALLASTES THORACICUS Loew, head of male; 9*a*, hind leg of male.
11. MALLOTA CIMBICIFORMIS Fall., hind leg of male; 11*a*, head of male.
12. TEUCHOCNEMIS LITURATUS O. S., hind leg of male; 12*a*, wing.
13. MALLOTA POSTICATA Fabr., hind leg of male.
14. MALLOTA SACKENI Will., wing.

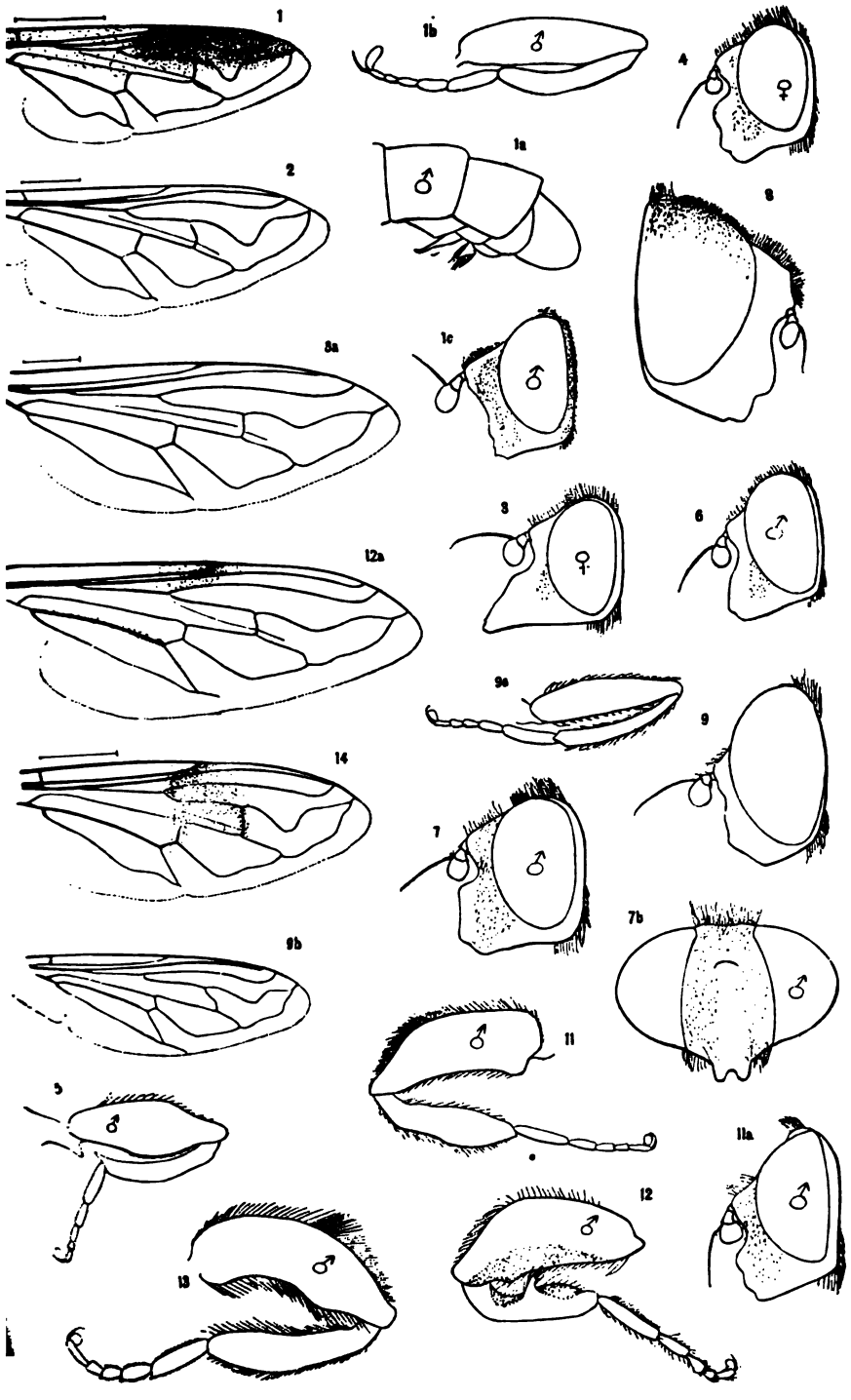

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PLATE IX.

1. TRIODONTA CURVIPES Wied., wing; 1*a*, head of male, front view; 1*b*, h male; 1*c*, hind leg of male; 1*d*, hind leg of female.
2. TROPIDIA QUADRATA Say, wing; 2*a*, head of male; 2*b*, hind leg of male.
3. CRIORHINA ANALIS Macq., wing.
4. CRIORHINA HUMERALIS Will., wing; 4*a*, head of male.
5. CRIORHINA SCITULA Will., head of male.
6. CRIORHINA LUPINA Will., female; 6*a*, head of male, front view; 6*b*, the side view.
7. CRIORHINA UMBRATILIS Will.
8. MALLOTA CIMBICIFORMIS, form BAUTIAS Walk., hind leg of male.

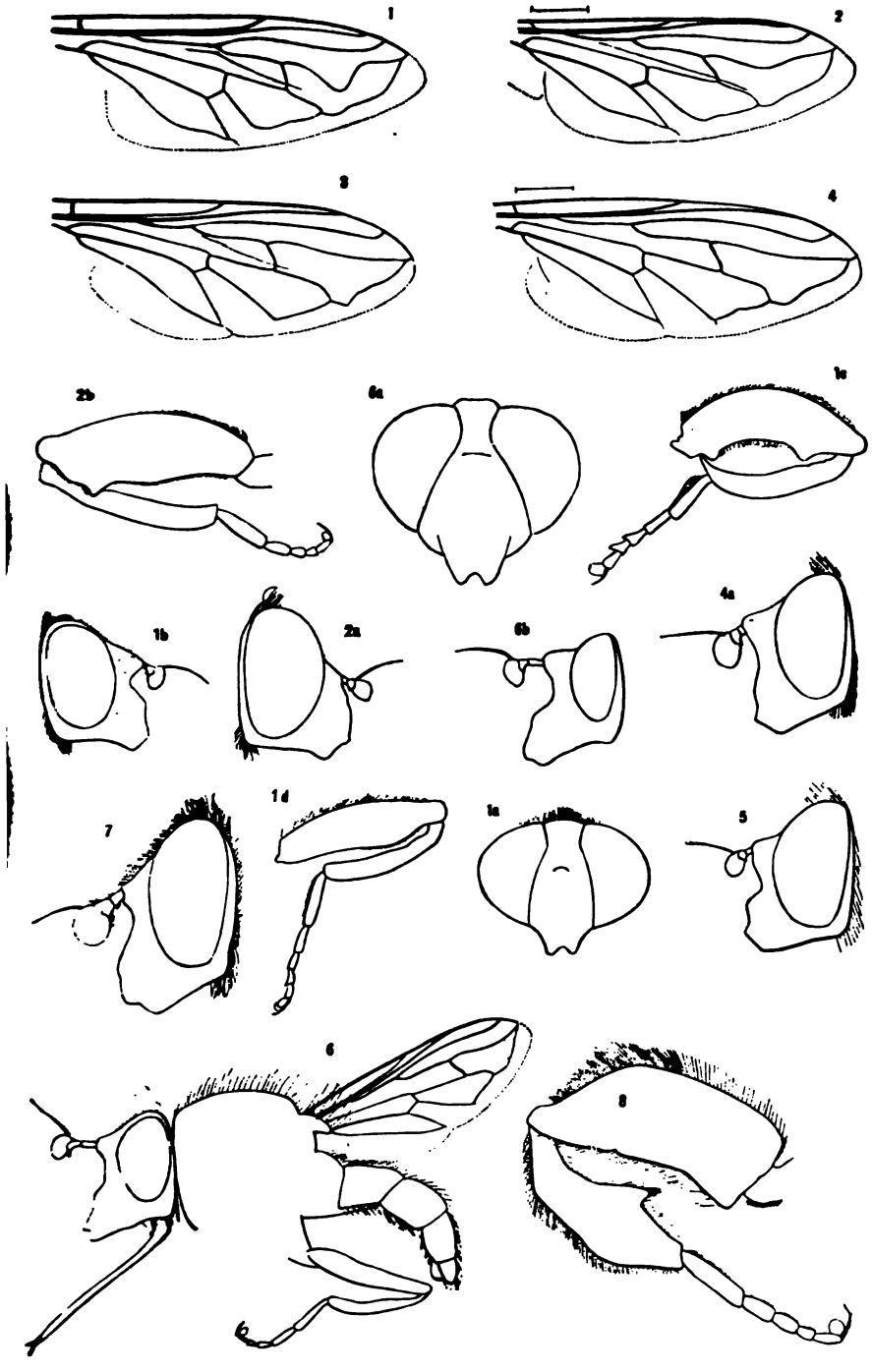
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PLATE X.

1. CRIORHINA NIGRIPES, Will., wing; 1*a*, head of female (the angle of the cheek and occiput is too much rounded); 7*b*, the same, front view.
2. CRIORHINA VERBOSA Harris, antenna.
3. CRIORHINA (SOMULA) DECORA Macq., wing; 3*a*, head of male; 3*b*, the same, side view.
4. CRIOPRORA CYANELLA O. S., wing (♀); 4*a*, hind leg of male; 4*b*, hind leg of female.
5. CRIOPRORA FEMORATA Will., head of male; 5*a*, hind leg of male.
6. CRIOPRORA CYANELLA O. S., head of female.
7. POCOTA GRANDIS Will., head of male; 7*a*, wing.
8. BRACHYPALPUS FRONTOSUS Loew, hind leg of male.
9. BRACHYPALPUS (CALLIPROBOLA) PULCHER Will., head of male, 9*a*, hind leg; 9*b*, wing.

PLATE X.

1, U. S. Nat. Mus.—Williston, Syrphidæ.

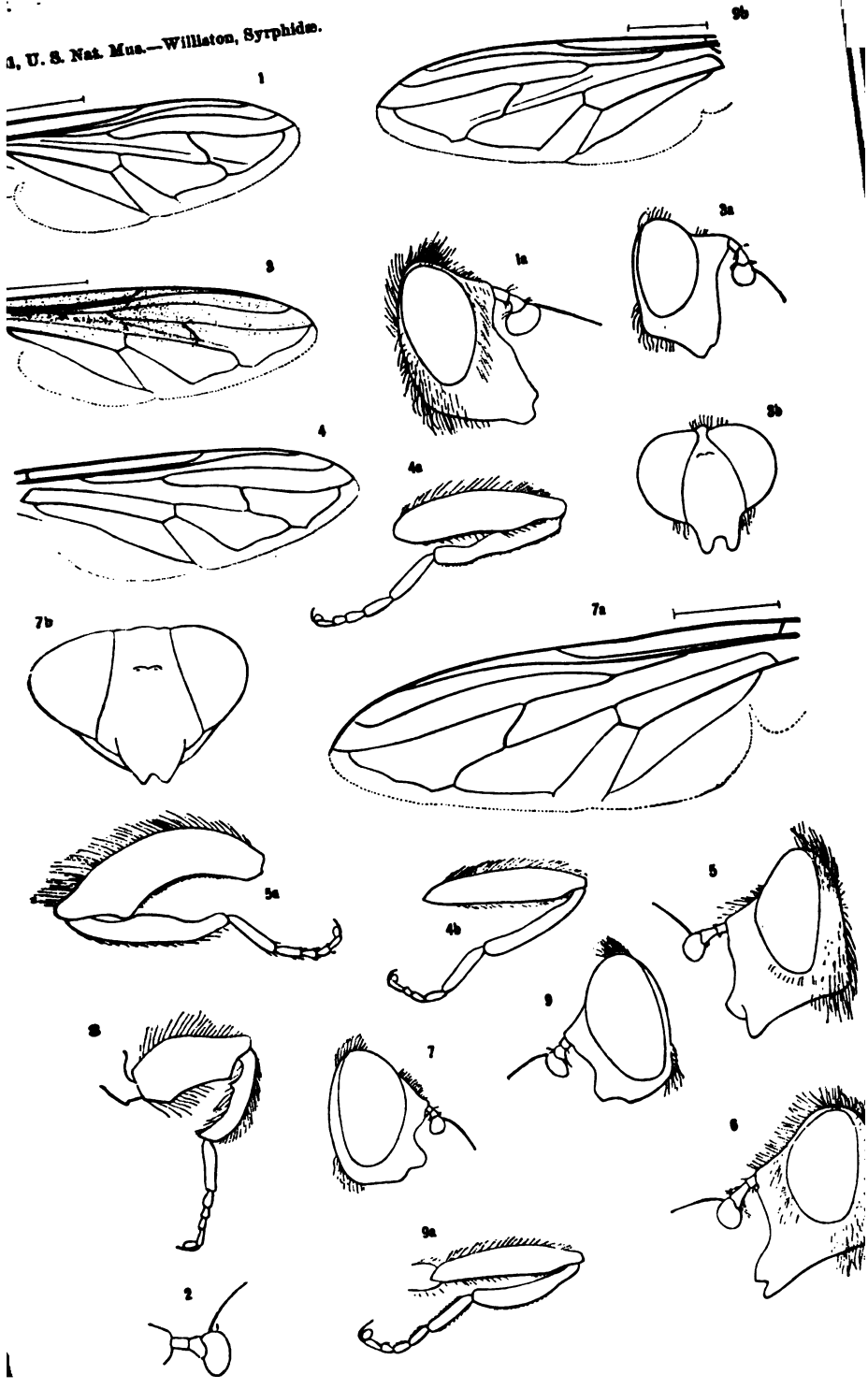

PLATE XI.

1. SENOGASTER COMSTOCKI Will., male; 1*a*, wing; 1*b*, head of male, front view.
2. MERAPIOIDUS VILLOSUS Bigot, head of female; 2*a*, wing.
3. XYLOTA PIGRA Fabr., wing.
4. EUMERUS SABULONUM Fallen (Europe), wing; 4*a*, head of male.
5. CHRYSOCHLAMYS DIVES O. S., wing; 5*a*, head of male.
6. XYLOTA FLAVITIBIA Bigot, hind leg of male.
7. XYLOTA PIGRA Fabr., hind leg of male; 7*a*, head of male.
8. XYLOTA EJUNCIDA Say, wing; 8*a*, hind leg of male.
9. XYLOTA ANGUSTIVENTRIS Loew, head of male.
10. BRACHYPALPUS FRONTOSUS Loew, head of male (the posterior orbit is too broad above).

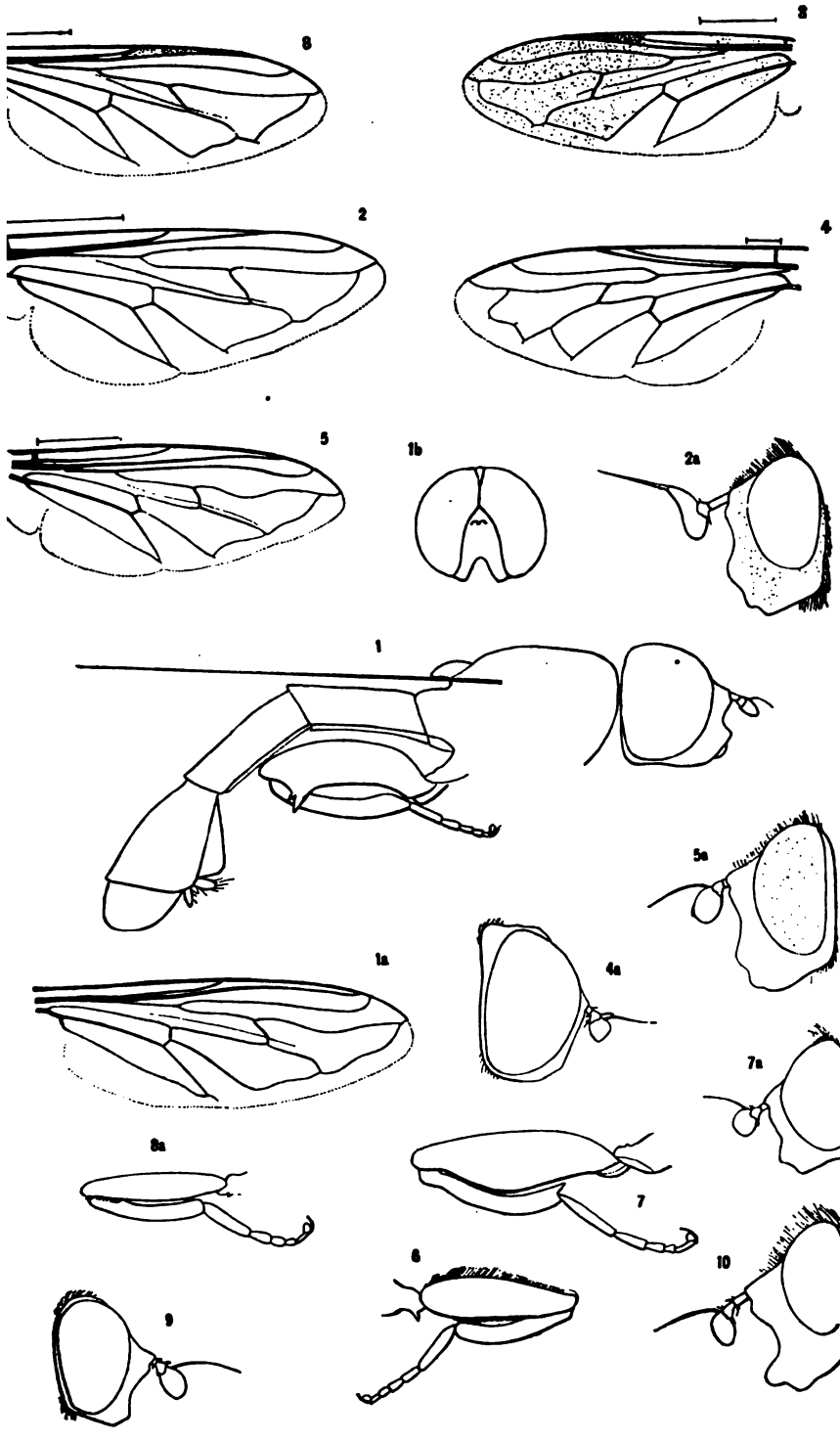
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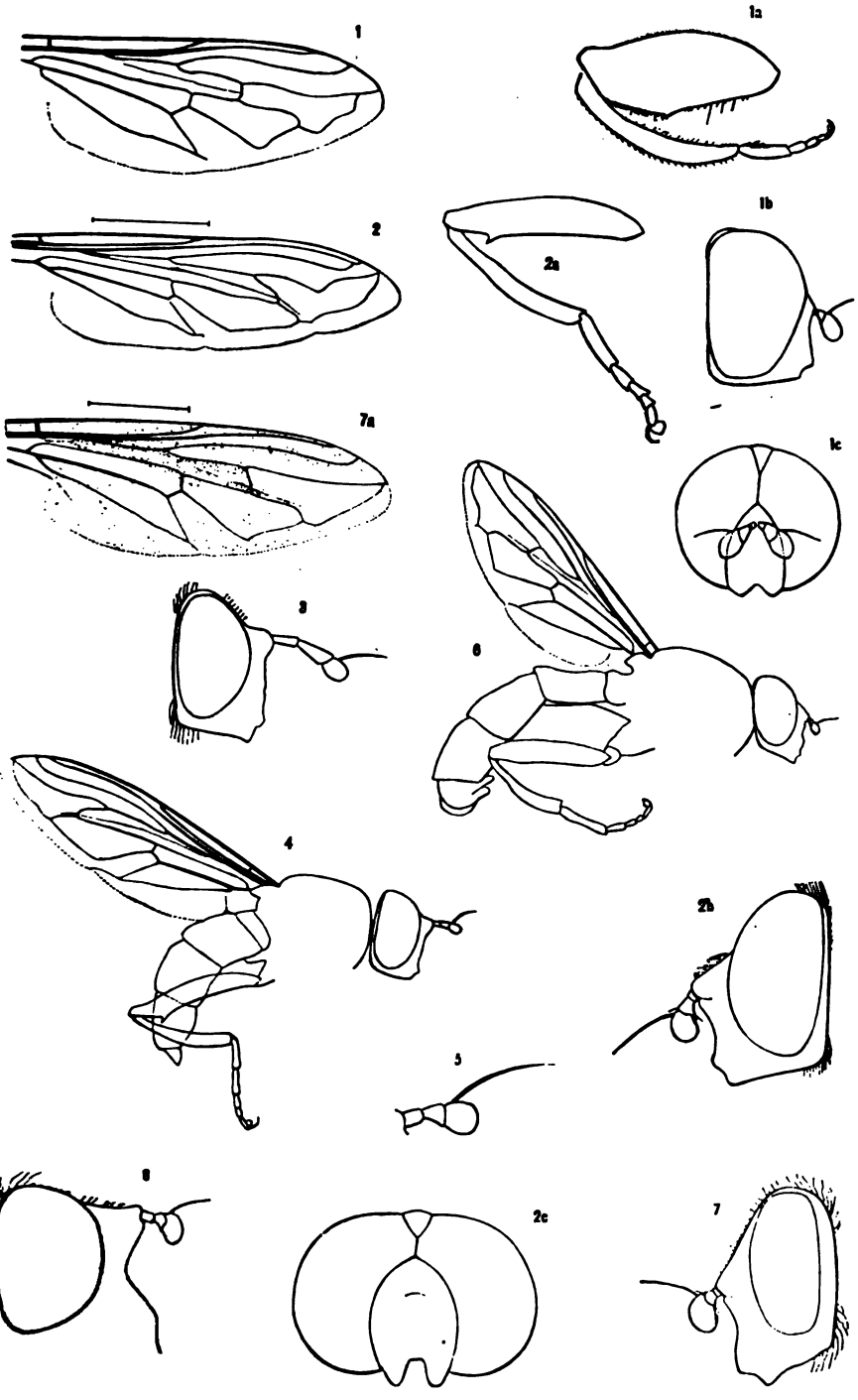
PLATE XII.

1. SYRITTA PIPIENS Linné, wing; 1*a*, hind leg of male; 1*b*, head of male; 1*c*, the same, front view.
2. MILESIA ORNATA Fabr., wing; 2*a*, hind leg.
3. SPILOMYIA QUADRIFASCIATA Say, head of male.
4. SPILOMYIA INTERRUPTA Will., male.
5. SPILOMYIA FUSCA Loew, antenna (the third joint is a little too much rounded).
6. TEMNOSTOMA BOMBYLANS Fabr., male.
7. TEMNOSTOMA ALTERNANS Loew, head of female.
8. SPHECOMYIA PATTONI Will., head of male; 7*a*, wing.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— Serial Number 42 —

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NITED STATES NATIONAL MUSEUM.

No. 32.

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WASHINGTON:
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1887.

ADVERTISEMENT.

This work (Bulletin No. 32) is the forty-second of a series of papers intended to illustrate the collections of natural history and ethnology belonging to the United States, and constituting the National Museum, of which the Smithsonian Institution was placed in charge by the act of Congress of August 10, 1846.

It has been prepared at the request of the Institution, and printed by authority of the honorable Secretary of the Interior.

The publications of the National Museum consist of two series—the Bulletins, of which this is No. 32, in continuous series, and the Proceedings, of which the ninth volume is now in press.

The volumes of Proceedings are printed, signature by signature, each issue having its own date, and a small edition of each signature is distributed to libraries promptly after its publication.

From time to time the publications of the Museum which have been issued separately are combined together and issued as volumes of the Miscellaneous Collections. These are struck off from the stereotype plates from which the first edition was printed, and in this form are distributed by the Smithsonian Institution to libraries and scientific societies throughout the world. Volume 13 of these collections includes Bulletins 1 to 10, inclusive; volume 19, volumes 1 and 2 of the Proceedings; volume 22, volumes 3 and 4 of the Proceedings; and volume 23, Bulletins 11 to 15, inclusive.

Full lists of the publications of the Museum may be found in the current catalogues of the publications of the Smithsonian Institution.

Papers intended for publication in the Proceedings and Bulletins of the National Museum are referred to the Committee on Publications, composed as follows: T. H. Bean, A. Howard Clark (editor), Otis T. Mason, Leonhard Stejneger, Frederick W. True, and Lester F. Ward.

SPENCER F. BAIRD,
Secretary of the Smithsonian Institution.

SMITHSONIAN INSTITUTION,
Washington, December 1, 1886.

CATALOGUE

OF

BATRACHIANS AND REPTILES

OF

CENTRAL AMERICA AND MEXICO

BY

E. D. COPE.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1887.

LETTER OF TRANSMITTAL.

PHILADELPHIA, *January* 16, 1886.

AR SIR: In the following pages you will find a systematic and nymic catalogue of the species of Batrachia and Reptilia described to this date as inhabiting Central America and Mexico. It is very ely based on the specimens contained in the Museum of the Smith- an Institution. To each species is added a list of the localities at h it has been discovered, together with the name of the discoverer, the absence of that, with the name of the author who is responsi- or the correctness of the locality.

the great majority of cases I have seen the species, and am responsi- or their validity, but I have admitted a number on the authority of r authors. For aid in the identification and in other respects, I am bted to the magnificent report on reptiles and amphibians by Du- l and Bocourt in the series published by the Mission Scientifique lexique et dans l'Amerique Centrale, and to the work of Günther he Biologia Centrali-Americana, of which four numbers have ap- ed up to this date. The receipt, at the last moment, of the Cata- e of the Lizards in the British Museum, by Boulenger, has enabled o make a number of additions, but not to quote it as fully as I ld like.

o attempt has been made to arrange the species in accordance with geographical distribution, as the facts collected to this end are yet sufficiently numerous.

he total number of genera represented in this catalogue is 197, and pecies 705. These are divided between 135 Batrachia and 570 Rep- . For further details, see end of catalogue.

I am your obedient servant,

E. D. COPE.

ofessor S. F. BAIRD,
Secretary of the Smithsonian Institution.

CATALOGUE

OF

BATRACHIA AND REPTILIA OF CENTRAL AMERICA AND MEXICO.

BATRACHIA.

URODELA.

AMBLYSTOMIDÆ.

Amblystoma Tschudi.

Baird, Journ. Acad. Nat. Sci. Phila., 1847, p. 283; Cope, Proc. Phila. Acad., 1867, p. 167; *Siredon* Wagler, Nat.-System der Amphibien, 1830, p. 209.

AMBLYSTOMA MEXICANUM Shaw; Cope, Proc. Phila. Acad., 1867, p. 184; *Gyrinus mexicanus* Shaw, Nat. Misc. 1800, p. 343; *Siren pisciformis* Shaw; *Siredon axolotl* Wagler, Cuvier, Humboldt; *Hypochthon pisciformis* Gravenhorst; *Acholotes guttatus* Owen; *Siredon mexicanus* Baird.

Valley of Mexico, *Potts, Sumichrast, Flohr.**

AMBLYSTOMA TIGRINUM (Green) Baird, Journ. Acad. Nat. Sci. Phila., 1847, p. 292; Cope, Proceeds. Acad. Phila. 1867; Boulenger Cat. Bat. Grad. B. M., p. 43; *A. mavortium* and *A. proserpine* Baird, l. c.; *A. maculatum* Hallowell; *Amblystoma* Duméril, Nouv. Archives de Museum, ii; Comptes Rendus de l'Académie des Sciences, 1865, pp. 765–795; *Siredon tigrinus* Velasco, Naturaleza México, Dec., 1878.

"Mexico," *Duméril;* between Chihuahua and the city of Mexico, *Potts;* Valley of Mexico, *Velasco;* Guanajuato (mountains), *Dugés;* Huasca, *Comision Geográfica.*

AMBLYSTOMA DUMERILI Dugés; *Siredon dumerili* Dugés, Naturaleza México, 1870, p. 241, pl. v.

Lake Patzcuaro, Guanajuato, *Dugés.*

PLETHODONTIDÆ.

Œdipina Keferstein.

Archiv für Naturgeschichte, 1868, p. 299; *Opheobatrachus* Gray, Ann. Magaz. Nat. Hist., 1868, p. 297; Cope, Proc. Acad. Phila., 1868, p. 299.

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* The axolotls whose metamorphosis has been observed in confinement by Duméril and others, are not the spotted axolotl of the Valley of Mexico, whose metamorphosis has not yet been recorded, as I pointed out in the Am. Journal Sci. Arts, Feb., 1871, and as Boulenger observes in the Catalogue Batrachia Gradientia British Museum, 1882, p. 51. It is, however, probable that it takes place in the latter species, so that I have referred it to Amblystoma.

ŒDIPINA UNIFORMIS Keferst., Arch. f. Naturgeschichte, 1868, p. 299; *Ophiobatrachus vermicularis* Gray, Annals and Magaz. Nat. Hist., 1868, p. 297; *Spelerpes uniformis* Boulenger, Catal. Batr. Grad. Brit. Museum 75.

Hab.—Costa Rica, *Salvin;* E. Costa Rica, *Gabb;* Costa Rica, *Seebach.*

ŒDIPINA LINEOLUS Cope; *Spelerpes lineolus* Cope, Proc. Acad. Nat. Sci. Phila., 1865, p. 196; *Ophiobatrachus lineolus* Cope, l. c., 1869, p. 101.

Orizaba, *Sumichrast.*

Œdipus Tschudi.

1838, Gray; Cope, Proc. Acad. Nat. Sci. Phila., 1869, p. 102; *Geotriton pars* Cope, Proc. Acad. Phila., 1860, p. 373.

ŒDIPUS JUCATANICUS Boulenger; *Spelerpes yucatanicus* Boulenger, Catal. Batr. Grad. Brit. Mus., p. 72, 1883.

Yucatan, *Boulenger.*

ŒDIPUS VARIEGATUS Gray; Catal. Batr. Grad. Brit. Mus., 1850, p. 48; *Salamandra variegata* Gray, Griffith's Animal Kingdom, ix, p. 107; *Bolitoglossa mexicana* part Dum., Bibr. Erpétologie Générale, ix, 1854, p. 93; *Œdipus carbonarius* Cope, Proc. Acad. Phila., 1869, 103; *Geotriton carbonarius* Cope, loc. cit., 1860, p. 373. *Spelerpes atitlanensis* et *mulleri* Brocchi, Miss. Sci. Mexique, p. 118, pl. xix, xx; & *variegatus* Boul., Cat. Bat. Grad. B. M., 73.

Vera Cruz, *Sartorius;* Orizaba, *Sumichrast;* Jalapa, *Montes de Oca;* Tehuantepec, *Sumichrast.*

Subspecies SALVINI Gray, Annals and Mag. Nat. Hist., 1868, p. 297.

Guatemala, *Salvin, Hague;* Tehuantepec, *Sumichrast.*

ŒDIPUS RUFESCENS Cope, Proc. Acad. Phila., 1869, p. 104; Boulenger, Catal. Batr. Grad. Brit. Mus., p. 71; *Spelerpes (Œdipus) lignicolor* Peters Monatsb. Ak. Berl. 1873, p. 16.

Orizaba and Cordova, Vera Cruz, *Sumichrast.*

ŒDIPUS MORIO Cope, Proc. Acad. Phila., 1860, p. 103; *Geotriton carbonarius* black variety, Cope, l. c., 1868, p. 313. *Spelerpes morio* Boulenger, Catal. Bat. Grad. Brit. Mus. 1883, p. 70.

Guatemala, *van Patten;* ? E. Costa Rica, *Gabb;* Plateau of Costa Rica, *Zeledon*

Spelerpes Raf.

Baird emend., Journ. Acad. Phila., 1847; Cope, Proc. Acad. Phila., 1869, p. 104; *Pseudotriton* Tsch., Baird, Hallow.

SPELERPES CHIROPTERUS Cope, Proc. Acad. Phila., 1863, p. 54; *S. orculus* Cope, loc. cit., 1865, p. 196.

Hab.—Mirador, near Vera Cruz, *Sartorius;* Orizaba, alpine zone, *Sumichrast.*

SPELERPES CEPHALICUS Cope, loc. cit., 1865, p. 196; Boulenger, Catal. Batr. Grad. Brit. Mus., p. 67.

SPELERPES LEPROSUS Cope, loc. cit., 1869, p. 105; Boulenger, Catal. Batr. Grad. Brit. Mus., p. 68; Brocchi, Mission Scientif. Mex., plate xix, f. 1–2.

Vera Cruz, alpine zone, *Sumichrast.*

SPELERPES BELLII Gray, Catal. Brit. Mus., 1846; Cope, Proc. Acad. Phila., 1860, p. 372; l. c., 1869, 104; *Œdipus platydactylus* "Tsch." Baird, Journ. Acad. Phila., 1847, 282–6; *Bolitoglossa mexicana* Duméril et Bibron, Erp. Gén., ix, p. 93, 1854, pl. civ, fig. 2 (exclus. synon.).

Vera Cruz, *Sumichrast;* Jalapa, *De Oca;* between Chihuahua and the city of Mexico *Potts;* Guanajuato, *Dugès;* Zacualtipan *Bernad.*

Plethodon Tsch.

CEATER Cope, Proceeds. Acad. Phila., 1857, p. 210.
nia, *Xantus, Fisher.*

DESMOGNATHIDÆ.

Thorius Cope.

a., 1869, p. 111.

TULUS Cope, l. c., 111; American Naturalist, 1869, p. 222; Boulenger, Grad. Brit. Mus., p. 79.
co, *F. Sumichrast, E. D. Cope.*

CÆCILIIDÆ.

Gymnopis Peters.

Akad. Wiss. Berlin, 1879, 930, 938.

OZONA Cope, Proc. Amer. Philos. Soc., 1885, p. 171; *Siphonops oligo-* Proc. Amer. Philos. Soc., 1877. p. 91.
tain.

Cope; *Siphonops simus*, Cope, Proc. Amer. Philos. Soc., 1877, p. 91.
act locality uncertain, *Von Franzius.*

TIPLICATA Peters, Monatsber., l. c., p. 939; *Syphonops multiplicatus* 1874, 616.
s.

IMA Cope, Proc. Amer. Philos. Soc., 1885, p. 171; *Siphonops proximus* Amer. Philos. Soc., 1877, p. 90; *S. mexicanus* Cope, Journ. Acad. Nat. 875, p. 96.
rn Costa Rica, *Gabb.*

Dermophis Peters.

Akad. Wiss. Berlin, 1879, p. 937.

ICANUS Dum. Bibr., Peters Monatsber, loc. cit.; *Siphonops mexicanus* Erp. Gen., viii, 284.
Sumichrast; Tobasco, *Laszlo.*

NTREMUS Cope, Proc. Amer. Philos. Soc., 1885, p. 171; *Siphonops syn-* Proc. Acad. Phila., 1866, p. 129.
rsons.

Herpele Peters.

L., Berlin, 1879, p. 939.
CEPHALA Cope, Proc. Amer. Philos. Soc., 1885, p. 171. *Cæcilia ochro-*, Proc. Acad. Phila., 1866, p. 132; Journ. Acad. Phil., 1875, p. 155.
ion Scientif. Mex., plate xxi.
r, Nelson; Panama, Atlantic side, *Bransford.*

Cæcilia Linn.

d. Amphibien, 1830.

CA Cope, Proc. Amer. Philos. Soc., 1877, p. 91; Boulenger, Catal. Brit. Mus., p. 94.
e Isthmus of Darien, *Selfridge.*

ANURA.

ARCIFERA.

BUFONIDÆ.

Engystomops Espada.

Ann. Soc. Espan., i, 1872, p. 86; *Paludicola* "Wagl." Cope nec Wagleri, Proc. Acad. Phila., 1864, 180; *Microphryne* Peters, Monatsber. Berlin Akad., 1873, p. 616; *Paralaimos* Espada, Viaj. Pac. Vert., p. 163, teste Boulenger.

ENGYSTOMOPS PUSTULOSUS Cope; Boulenger, Catal. Batr. Sal. Brit. Mus., 1882, p. 275; *Paludicola pustulosa* Cope, Proc. Acad. Phila., 1864, p. 180; *Microphryne pustulosa* Peters; Cope, Journ. Acad. Phila., 1875, p. 155.

Buchio Soldado, Panama, *Bransford;* Tehuantepec, *Sumichrast.*

Bufo Laurenti.

Rhœbo, Bufo, Incilius, Chilophryne, Cope.

BUFO PLEUROPTERUS Schmidt, Denkschriften Wiener Akad. Wiss., 1858, p. 252, pl. ii, figs. 17–19; Cope, Journ. Acad. Phila., 1825, p. 155.

Buchio Soldado, Panama, *Bransford;* Veragua, *Warczewicz.*

BUFO HÆMATITICUS Cope, Proc. Acad. Phila., 1862, p. 157; Journ. Acad. Phila., 1875, p. 155; et var. *lachrymans,* l. c.; *Rhœbo hæmatiticus,* l. c., 1863, p. 49.

Talamanca, Costa Rica, *Gabb;* Mary Caretta, Panama, *Bransford;* Coban, Vera Paz, *Salvin;* West coast of Central America; Nicaragua, *Bransford.*

BUFO POLITUS Cope, Proc. Acad. Phila., 1862, p. 158; Boulenger, Catal. Batr. Grad. Brit. Mus., 1882, p. 292.

Graytown, Nicaragua, *Caldwell.*

BUFO COMPACTILIS Weigmann, Isis, 1833, p. 661; *Bufo speciosus* Girard, Proc. Acad. Phila., 1854, p. 86; Baird, U. S. & Mexican Boundary Survey, 2 C, pl. xl, figs. 5–10; *Bufo anomalus* Günther, Catal. Batr. Sal. Brit. Mus., p. 57, 1858; *Bufo levifrons* Brocchi, Bull. Soc. Philomathique, Paris, 1877, p. 187; *Dromoplectrus anomalus* Camerano.

Valley of Mexico (*J. Potts*) to Rio Grande; Guanajuato, *Dugés;* Pueblo, *Comision Geográfica.*

BUFO MONKSLEE Cope, Proc. Amer. Philos. Soc., 1879, p. 263; Boulenger, Catal. Batr. Grad. Brit. Mus., 1882, p. 292.

Guanajuato, *Dugés.*

BUFO DEBILIS Girard, Proc. Acad. Phila., 1854, p. 87.

Chihuahua and Sonora, *Baird:* Mazatlan, *Bischoff;* Tamaulipas, *Baird.*

BUFO PUNCTATUS Bd. and Girard, Proc. Acad. Phila., 1852, p. 172.

Chihuahua River and tributaries, *J. Potts;* Guanajuato, *Dugés;* Lower California, *Xantus.*

BUFO INTERMEDIUS Günther, Catal. Batr. Sal. Brit. Mus., 1858, p. 140, pl. 18, fig. A.

Orizaba, *Sumichrast;* Guanajuato, *Dugés;* Matamoras, Pueblo, *Comision Geográfica.*

BUFO ARGILLACEUS Cope, Proc. Phila. Acad., 1868, p. 138.

Colima, *J. Xantus.*

BUFO MARINUS Linn.; Boulenger, Cat. Bat. Sal. Brit. Mus., 1882, p. 315; *Rana marina* Linn.; *Bufo agua* Latreille et auctorum; *Bufo horribilis* Wiegmann, 1833, p. 654.

Panama, *Bransford;* Costa Rica, *Gabb;* Nicaragua, *Bransford;* Tehuantepec, *Sumichrast;* Yucatan, *Schott;* Peten, *Berendt;* Cordova and Orizaba, *Sumichrast;* Colima, *Xantus;* Coatzacoalcos R. *Streets;* Belize, *Broccki;* Cozumel Id., *Ridgway.*

BUFO STERNOSIGNATUS Günther, Catal. Batr. Sal. Brit. Mus., 1858, p. 68; Cope, Journ. Acad. Phila., 1875, p. 101.
Tehuantepec, *Sumichrast;* Costa Rica, *Keferstein;* Coatzacoalcos R., *Streets.*

BUFO CANALIFERUS Cope, Proc. Amer. Phil. Soc., 1877, p. 85.
Tuchitan, Tehuantepec, *Sumichrast.*

BUFO VERAGUENSIS Schmidt, Denkschr. Weinen. Akad. Wiss, 1858, 253, pl. xx, f. 20; iii, f. 21; Günther, Catal. Brit. Mus., p. 142.
Veragua, *Warczewicz.*

BUFO COCCIFER Cope, Proc. Acad. Phila., 1866, p. 130; Journ. Acad. Phila., 1875, p. 100, pl. xxiii, fig. 5.
Costa Rica, *Riotte;* Tuchitan Tehuantepec, *Sumichrast;* City of Guatemala, *Van Patten.*

BUFO VALLICEPS Weigman, Isis, 1833, p. 657; *Bufo granulosus* Baird & Girard, Proc. Acad. Phila., 1852, p. 173; *B. nebulifer* Girard, loc. cit., 1854, p. 87; U. S. & Mex. Boundary Survey, ii, p. 25, pl. xl, figs. 1–4.
Costa Rica, *Gabb;* Nicaragua, *Bransford;* Tehuantepec, *Sumichrast;* Tamaulipas, *Baird;* Vera Paz, *Brocchi;* Puebla, *Comision Geográfica.*

BUFO MELANOCHLORUS Cope, Proc. Amer. Phil. Soc., 1877, p. 85; *B. vallicepos* var. Cope, Journ. Acad. Phila., 1865, p. 100.
E. Costa Rica, *Gabb.*

BUFO AURITUS Cope, Journ. Acad. Phila., 1875, p. 99.
Talamanca, Costa Rica, *Gabb;* West coast Central America.

BUFO CRISTATUS Weigman, Isis, 1833, p. 660.
Xalapa, *Montes de Oca;* Orizaba and Vera Cruz, *Sumichrast.*

BUFO BOCOURTI Brocchi, Bulletin de la Société Philomathique de Paris, 7 (1), p. 186.
Totonicapam *Bocourt.*

Ollotis Cope.

Journ. Acad. Phila., 1875, p. 98.

OLLOTIS CŒRULESCENS Cope, l. c., 1875, p. 98.
From 3,000 to 5,000 feet elevation on Pico Blanco, Talamanca, Costa Rica, *Gabb.*

Crepidius Cope.

Journ. Acad. Phila., 1875, p. 97.

CREPIDIUS EPIOTICUS Cope, l. c., pl. xxiii, fig. 2.
From 5,000 feet elevation on Pico Blanco; Salamanca, Costa Rica, *Gabb.*

Cranopsis Cope.

Journ. Acad. Phila., 1875, p. 96.

CRANOPSIS FASTIDIOSUS Cope., l. c., 96, pl. xxiii, fig. 1.
From 2,500 feet elevation on the slope of Pico Blanco, in the district of Talamanca, Costa Rica, *Gabb.*

RHINOPHRYNIDÆ.

Rhinophrynus Dum. Bibr.

Erpétologie Générale, viii, p. 757; Günther, Catal. Batr. Sal. Brit. Mus., p. 127.

RHINOPHRYNUS DORSALIS Dum. Bibr., l. c., p. 758, pl. xci, figs. 2–2*a;* *R. rostratus* Brocchi, Bull. Soc. Philomath. Paris, i, p. 196; Miss. Sci. Mexique, Batr., pl. ix, fig. 1.
Tehuantepec, *Sumichrast;* Peten, *Berendt;* Tobasco, *Lasslo;* Tuxpan, *Linccum.*

SCAPHIOPIDÆ.

Scaphiopus Holbr.

SCAPHIOPUS COUCHII Baird; subspecies VARIUS Cope, Proc. Acad. Phila., 1863, p. 52.
Cape St. Lucas, Lower California, *Xantus.*

SCAPHIOPUS MULTIPLICATUS, Proc. Acad. Phila., 1863, p. 51; *Spea multiplicata* Cope, Journ. Acad. Phila., 1866, p. 81.
Hab.—Valley of Mexico, *Potts.*

SCAPHIOPUS HAMMONDII Baird, U. S. Pacific R. R. Surv.; Williamson's Report, 12; Cope, Proc. Acad. Phila., 1863, p. 53; *Spea hammondii* Cope, Journ. Acad. Phila., 1866, p. 81; *Spea stagnalis* Cope (Young), Report of G. G. Exped. and Surys. west of 100th Mer., G. M. Wheeler, v, p. 525, pl. xxv, figs. 6, 7, 8; *Scaphiopus dugèsi* Brocchi, Bull. Soc. Philomath. Paris, 1879, p. 3; Mission Sci. au Mexique, p. 94, pl. ix, fig. 4.
Chihuahua, *Potts;* Guanajuato, *Dugès.*

HYLIDÆ.

Triprion Cope.

Journ. Acad. Phila., 1866, p. 85. *Pharyngodon* Cope, Proc. Acad. Nat. Sci. Phila., 1865, p. 193 (preoccupied).

TRIPRION PETASATUS Cope, Proc. Acad. Phila., 1866, p. 127; *Pharyngodon petasatus,* loc. cit., 1865, p. 193.
Yucatan, *Schott.*

Diaglena Cope gen. nov.

Agrees with Triprion in most respects (teste Günther), but differs in having a transverse instead of a vertical pupil.

DIAGLENA SPATULATA Günther; *Triprion spatulatus* Günther, Ann. Mag. Nat. Hist., 1882, p. 279.
Presidio, West Mexico.

Pternohyla Boulenger.

Annals Mag. Nat. Hist., 1882, p. 326.
PTERNOHYLA FODIENS Boul., l. c.
Presidio, West Mexico.

Scytopis Cope.

Proc. Acad. Phila., 1862, p. 354; Journ. Acad. Phila., 1866, p. 85.

SCYTOPIS VENULOSUS Laurenti; *Rana venulosa* Laur.; *S. hebes* Cope, l. c., 1862, 354; *Acrodytes venulosus* Cope, Nat. Hist. Review, 1855, p. 109; *Rana venulosa* Laurenti, Synopsis Report, 1798, 31; *Hyla venulosa* Daudin, Hist. Rept., viii, 74, Rainettes, p. 35, pl. xiii; Dum. Bibr., viii, 560; Günther, Catal. B. M., 104; *Hypiboas venulosa* Wagler; *Calamita boans* Schneid., Hist. Amphib., 164; *Hyla sonalis* et *bufonia* Spix, t. 12, figs. 1-2.
Guatemala, *H. Berendt,* Nicaragua, *MacNeil.*

SCYTOPIS BOULENGERI Cope sp. nov.
Fingers free; heel extending beyond end of muzzle; skin slightly tuberculate. Head oval, with subacuminate muzzle, and nostrils pierced in the elevated extremity; canthus rostralis and lores concave. Eye prominate; its diameter twice that of tympanic membrane, and equ

and the length from its anterior border to the nostril. Internal nares longitudinal; vomerine teeth between them in two transverse fasciculi, which together form a series which is convex backwards. *Ostia pharyngea* half the size of choanæ. Tongue oval. Heel reaching a little beyond end of muzzle. Web short, extending to middle of antepenultinate phalange of fourth digit; none between first and second digits. Fingers free; the first opposing the second, which is longer and equal to the fourth (fifth). Palettes on all digits transversely oval. Skin nearly smooth, but with numerous small warts on the top of the head and the scapular and interscapular regions. Abdomen and sides finely areolate; throat and limbs smooth.

The color above is light gray, with dark gray markings as follows: A wide band descending downwards and forwards from eye; a wide band from eye above tympanum to behind the scapula; a cross-band on the sacrum, and one across the middles of the ilia. These marks are all quite indistinct. Similar cross-bands on exposed surfaces of limbs; six on femur, four on tibia, and five on digit of posterior foot. Concealed surfaces of femur and tibia light (? red or yellow) with purplish black cross-bands; three on front and back of femur, and four on under side of tibia. Several small spots of the same in the groin. Fore legs, throat, and belly immaculate.

Length head and body, 37^{mm}; length to tympanum, inclusive, 14^{mm}; the hind leg, 63^{mm}; the hind foot, 25^{mm}.

Nicaragua, *MacNeil*; No. 13974 Nat. Museum. Dedicated to the distinguished zoologist, Dr. G. A. Boulenger.

Smilisca Cope.

Proc. Acad. Phila., 1865, 194; Journ. Acad. Phila., 1866, p. 85.

SMILISCA BAUDINII Dum. Bibr., *Hyla baudinii* Duméril et Bibron, Erp. Gén., viii, 564; Günther, Catal. Brit. Mus., 105; Cope, Proc. Acad. Phila., 1863; *Hyla vanvlietii* Baird, Proc. Acad. Nat. Sci. Phila., 1854, p. 60; U. S. & Mex. Bound. Surv., t. xxxviii, figs. 1–3; *Hyla vociferans* Baird, U. S. & Mex. Bound. Surv., t. xxxviii, 11, 12, 13 (no description); *Hyla muricolor* Cope, l. c., 1862, p. 359; *Smilisca daulinia* Cope, l. c., 1865, p. 194 (skeleton).

High Valley of San José, Costa Rica, *Van Patten;* Guatemala, *Hague;* Peten, *Berendt;* Tehuantepec, *Sumichrast;* Guadalaxara, *Major;* Cordova and Orizaba, Vera Cruz, *Sumichrast;* Mirador, *Sartorius;* Rio Grande del Norte, *Van Vliet.*

Hypsiboas Wagler.

Cope emend. Journ. Acad. Phila., 1867, p. 200; *Plectrohyla* Brocchi, Bull. Soc. Philomath. Paris, 7 (i), p. 92; *Cauphias* Brocchi, l. c., p. 129.

HYPSIBOAS MILIARIUS Cope, Proc. Amer. Philos. Soc., 1886, p. 272.

Nicaragua, *Bransford.*

HYPSIBOAS XEROPHYLLUM Dum. Bibr. Erp. Gén., viii, 549. (Hyla) var.

Nicaragua, *Bransford.*

HYPSIBOAS ALBOMARGINATUS Spix, Cope, Proc. Amer. Philos. Soc., 1886.

Nicaragua, *Bransford.*

HYPSIBOAS CREPITANS Wied, Wagler, Syst. Amphib., 1830, p. 200; *Hyla crepitans* Wied. Beiträge zur Naturgesche, Brag, 525; Boulenger, Catal. Batr. Grad. Brit. Mus. 1882, 352; *Hyla palmata, doumercei et lecaillanti* Dum. Bibr., Erp. Générale, viii, p. 545–550; *Hyla pugnax* Schmidt, Denkschr. Wiener Akademie, 1858, 243, pl. ii, figs. 5–6.

Chiriqui River, *Warczewicz.*

HYPSIBOAS GUATEMALENSIS Brocchi; *Plectrohyla guatemalensis* Brocchi, Bull. Soc. Philomathique Paris, 7 (1), p. 92; *Cauphias guatemalensis* Brocchi, l. c., p. 129.

Guatemala, *Brocchi.*

† HYPSIBOAS CRASSUS Brocchi; *Cauphias guatemalensis* Brocchi, Bull. Soc. Philomathique Paris, 7 (1), p. 130.
"Mexico," *Brocchi.*

Hyla Laurenti.

Dum. Bibr., viii, 542, etc.; Cope, emend., Journ. Acad. Phila., 1865, p. 103.

HYLA GABBII Cope, Journ. Phila. Acad., 1875, p. 103.
E. Costa Rica, *Gabb.*

HYLA NIGRIPES Cope, Journ. Acad. Phila., 1875, p. 104, pl. xxiii, fig. 7.
E. Costa Rica, *Gabb.*

HYLA URANOCHROA Cope, Journ. Acad. Phila., 1875, p. 103, pl. xxvii, fig. 4.
E. Costa Rica, *Gabb.*

HYLA MIOTYMPANUM Cope, Proc. Acad. Phila, 1863, p. 47; *H. microtis* Peters, Monatsberichte k. k. Akad. Berlin, 1869, p. 880.
Mirador, Vera Cruz, *Sartorius;* Vera Cruz, *Sumichrast;* Jalapa, *Montes de Oca;* Puebla, *Berkenbusch;* Tehuantepec, *Sumichrast;* Zacualtipan, *Cope.*

HYLA EBRACCATA Cope, Proc. Acad. Phila, 1874, p. 69.
Nicaragua, *Bransford.*

HYLA ARENICOLOR Cope, Journ. Acad. Phila., 1866, p. 84; *H. affinis* Baird (not Spix); Proc. Acad. Phila., 1854, p. 61; U. S. & Mex. Bound. Survey, ii, p. 29, pl. xxxiii, figs. 4–7.
Guanajuato, *Dugés.* Between city of Mexico and Chihuahua, *Potts;* valleys of Mexico or Toluca, *Hoege.*
According to Dugés, the voice of this species is like that of a goat. It is, therefore, very different from that of its relative, the *H. versicolor* of the United States.

HYLA BISTINCTA Cope, Proc. Amer. Philos. Soc., 1877.
Vera Cruz, *? Sumichrast;* Zacualtipan, *Bernad.*

HYLA NIGROPUNCTATA Boulenger, Catal. Batr. Sal. Brit. Mus., 1882, p. 366.
"Jalapa, *Hoege;* Cordova, *Sallé*"; Puebla, *Comision Geográfica.*

HYLA ELEOCHROA Cope, Journ. Acad. Phila., 1875, p. 105, pl. xxvi, fig. 3.
E. Costa Rica, *Gabb;* Panama, Pacific side, *Bransford.*

HYLA QUINQUEVITTATA Cope, Proc. Amer. Philos. Soc., 1886, p. 273.
Nicaragua, *Bransford.*

HYLA EXIMIA Baird, Proc. Acad. Phila., vii, 1854, 61; U. S. & Mex. Bound. Survey, ii, 29, pl. xxxviii, figs. 8–10; *Hyla euphorbiacea* Günther, Catal. Batr. Sal. Brit. Mus., 1858, p. 109, pl. x, fig. 6.
Plateau of Mexico, *Rich, Sumichrast;* between Mexico and Chihuahua, *Potts;* Guanajuato, *Dugés.*
Subspecies STAUFFERII Cope, Proc. Acad. Phila., 1865, p. 195.
Orizaba, *Sumichrast;* Peters, *Berendt;* Guatemala, *Hague;* Guanajuato, *Dugés.*
This form somewhat resembles the *Chorophilus triseriatus clarkii.*

HYLA GRACILIPES Cope, Proc. Acad. Nat. Sci. Phila., 1865, p. 174.
Table-land of Mexico, *Sumichrast;* Puebla, *Comision Geográfica.*

HYLA SPLENDENS Schmidt, Denkschriften der Wiener Akademie, 1858, p. 244, pl. i, fig. 7.
"Central America," *Schmidt.*

HYLA PUMA Cope, Proc. Amer. Philos. Soc., 1884, p. 183.
Nicaragua, *Moser.*

HYLA MOLITOR Schmidt, Denkschriften der k. k. Wiener Akademie, 1858, p. 245, pl. i, figs. 8–9.
"Central America," *Schmidt.*

HYLA MICROCEPHALA Cope, Proc. Amer. Philos. Soc., 1866, p. 281.
Chiriqui, *National Museum Label;* (? MacNeil.)

HYLA PUNCTARIOLA Peters, Monatsberichte k. preuss. Acad. Wiss., 1863, p. 462; Cope, Journ. Acad. Phila., 1875, p. 106 (from Bogota).

Subspecies PICTIPES Cope, Journ. Acad. Phila., 1875, p. 106.

E. Costa Rica, *Gabb.*

Subspecies MONTICOLA Cope, l. c.

E. Costa Rica, *Gabb.*

Subspecies MOESTA Cope, l. c.

E. Costa Rica, *Gabb.*

HYLA SPILOMMA Cope, Proc. Amer. Philos. Soc., 1877, p. 86.

Cosamaloapam, Vera Cruz, *Sumichrast.*

HYLA CURTA Cope, Proc. Acad. Phila., 1866, p. 313.

Cape St. Lucas, *Xantus.*

Hylella Reinh. & Lütk.

Vidensk. Meddel. Kjöbenhavn, 1861, p. 199.

HYLELLA PLATYCEPHALA Cope, Proc. Amer. Philos. Soc., 1879, p. 267, *H. sumichrasti* Boulenger, Cat. Batr. Sal. Brit. Mus., 1882, p. 420; *Exerodonta sumichrasti*, Brocchi, Bull. Soc. Philom., Paris, 7 (iii), p. 20.

W. Tehuantepec, *Sumichrast*, 2,500 feet.

Agalychnis Cope.

Natural History Review, London, 1865, p. 110; Proc. Acad. Phila., 1865, p. 194; Journ. Acad. Phila., 1866, p. 86.

AGALYCHNIS MORLETII Dum., *Hyla moreletii* A. Dum., Ann. des Sci. Nat., 1854, p. 169; *Hyla holochlora* Salvin, Proc. Zool. Soc. London, 18; *Agalychnis moreletii* Cope, Nat. Hist. Rev., l. c.; Journ. Acad. Phila., 1875, p. 107.

Vera Paz, Guatemala, *Morelet, Salvin, Hague;* Costa Rica, *Riótte, Van Patten.*

AGALYCHNIS CALLIDRYAS Cope, Nat. Hist. Rev., l. c.; *Hyla callidryas* Cope, Proc. Acad. Phila., 1862, p. 359.

Near Cordova, Vera Cruz, *Sumichrast;* Panama, *Field, Dr. Thonberg;* (Mus. Comp. Zoology, Cambridge).

AGALYCHNIS HELENÆ Cope, Proc. Amer. Philos. Soc., 1884, p. 182; 1886, p. 274.

Nicaragua, *Moser, Bransford.*

AGALYCHNIS LEMUR Boulenger; *Phyllomedusa lemur* Boulenger, Catal. Batr. Sal. Brit. Mus., 1882, p. 425.

Costa Rica, *Boulenger.*

AGALYCHNIS DACNICOLOR Cope, Journ. Acad. Phila., 1866, p. 86; *Phyllomedusa dacnicolor* Cope, Proc. Acad. Phila., 1864, p. 181; Boulenger, Ann. Mag. Nat. Hist., 1862, 328.

Colima *Xantus;* Mazatlan, *Bischoff;* San Blas, *Boulenger.*

CYSTIGNATHIDÆ.

Hylodes Fitzinger.

Cope emend., Proc. Acad. Phila., 1861, p. 153; Journ. Acad. Phila., 1866, p. 96.

HYLODES POLYPTYCHUS Cope, Proc. Amer. Philos. Soc., 1866, p. 276.

Nicaragua, *Bransford.*

HYLODES CERASINUS Cope, Journ. Acad. Phila., 1875, p. 112, pl. xxvi, fig. 4.

Eastern slope of Pico Blanco, Costa Rica, *Gabb.*

Lithodytes Cope.

Nat. Hist. Review, London, 1865; Journ. Acad. Phila., 1866, p. 96; *Lithodytes*, *Eukyas*, and *Batrachyla* (Bell) Cope, Proc. Acad. Phila., 1862, p. 165; *Craugastor* Cope, loc. cit., 1861, p. 153; *Likyla* Keferstein, K. Gesellsch. Wiss. Goettingen, 1867; Archiv f. Naturgesch., 1868, p. 926.

LITHODYTES DIASTEMA Cope, Journ. Acad. Phila., 1875, p. 155.
Mary Caretta, Panama, *Bransford;* Nicaragua, *Bransford.*

LITHODYTES BRANSFORDII Cope, Proc. Amer. Philos. Soc., 1886, p. 274.
Nicaragua, *Bransford.*

LITHODYTES RANOIDES Cope, Proc. Amer. Phil. Soc., 1886, p. 275.
Nicaragua, *Bransford.*

LITHODYTES PODICIFERUS Cope, Journ. Acad. Phila., 1875, p. 107, pl. xxiii, fig. 9.
E. Costa Rica, *Gabb.*

LITHODYTES MURICINUS Cope, loc. cit., 1875, p. 103.
Subspecies MURICINUS.
Costa Rica, *Gabb.*
Subspecies HABENATUS Cope; *Lithodytes habenatus* Cope, loc. cit., p. 110.
Pico Blanco, Costa Rica, *Gabb.*

LITHODYTES RHODOPIS Cope, Proc. Acad. Phila., 1866, p. 323; *Hylodes sallaei* Günther, Proc. Zool. Soc. Lond., 1868, p. 487, pl. xxxviii, f. 3.
Orizaba and Cordova, Vera Cruz, and Tehuantepec, *Sumichrast;* Guatemala, *Hagu;* Pueblo and Jalapa, *Comision Geográfica.*

LITHODYTES AUGUSTI Dugés, Brocchi, Bull. Soc. Philomathique, Paris, 7 (iii), p. 21; Mission Sci. au Mexique, Batr., p. 52, pl. xvi, f. 1.
Guanajuato, *Dugés.*

LITHODYTES LANCIFORMIS Cope, Proc. Amer. Philos. Soc., 1877, p. 88.
From the west coast of Central America, without more specific locality.

LITHODYTES MELANOSTICTUS Cope, Journ. Acad. Phila., 1875, p. 109, pl. xxiii, fig. 10; Batr. & Rept., Costa Rica, 1875, p. 109, pl. xxiii, fig. 10.
E. Costa Rica, from 7,000 feet elevation on the Pico Blanco, *Gabb.*

LITHODYTES PELVICULUS Cope, Proc. Amer. Philos. Soc., 1877, p. 89.
West coast of Central America, without more special designation of locality.

LITHODYTES MEGACEPHALUS Cope, Journ. Acad. Phila., 1875, p. 109, pl. xxiii, fig. 11.
Six thousand feet elevation on Pico Blanco, *Gabb.*

LITHODYTES GULOSUS Cope, Journ. Acad. Phila., 1875, p. 112.
Six thousand feet elevation on Pico Blanco, E. Costa Rica, *Gabb.*

LITHODYTES GRISEUS Hallowell, Cope, Proc. Acad. Phila., 1863, p. 48; *Hyla grisea* Hallow., Proc. Acad. Phila., 1860, p. 485. *Hylodes griseus* Steindachner, K. K. Bot.-Zool. Ges. Wien, 1864, p. 245; *H. fenestratus* Steind., l. c., 249, tab. xvii, xviii
Nicaragua, *Stimpson;* ? Orizaba, *Cope.*

LITHODYTES BERKENBUSCHII Peters, (*Hylodes*) Monatsber. Berl. Acad., 1869, p.
Middle Mexico, *Berkenbusch.*

LITHOYDTES GUENTHERII Keferstein, *Liyla guentherii* Keferst., Archiv f. Natur
1886, p. 926; *Liyla rugulosa* Cope, Proc. Amer. Philos. Soc., 1869, p. 1
Boulenger; *Hylodes rugosus* Brocchi, Miss. Sci. Mex.; *H.* H. palmatus Bou
Bat. Sal. Brit. Mus.
Costa Rica, *Seebach;* West Tehuantepec, *Sumichrast.*

Epirhexis Cope.

Journ. Acad. Phila., 1866, p. 96.
EPIRHEXIS LONGIPES Baird, *Batrachyla longipes* Baird, U. S. & U. S. &
T. 37 f., 1-3.
Mex. Mexico.

s Dum., *Hylodes laticeps*, A. Duméril, Catal. Méth. Rept. du ; Erpétologie Générale, pl. xcix.
t.

Hypodictyon Cope.

los. Soc., 1885, p. 383.

N RIDENS Cope, loc. cit.; *Phyllobates ridens* Cope, Proc. Acad. Phila., 131; Journ. Acad. Phila, 1875, p. 155.
R. Nicaragua, *Kennicott;* Panama, *Bransford.*

Phyllobates Bibron.

agra's Hist. Cuba, Reptiles; Dum. Bibr., Erp. Gén., viii, 637.

LOBATES HYLAEFORMIS Cope, Journ. Acad. Phila., 1875, p. 107; pl. xxiii, fig. 8.
co Blanco, at 7,000 feet elevation, Talamanca E. Costa Rica, *Gabb.*

Syrrhophus Cope.

merican Naturalist, 1878, 253.

YRRHOPHUS VERRUCIPES Cope, Proc. Amer. Philos. Soc., 1885, p. 383.
Near Zacualtipan, Hidalgo, *Cope.*

YRRHOPHUS LEPRUS Cope, Proc. Amer. Philos. Soc., 1879, p. 268.
West Tehuantepec, *Sumichrast.*

YRRHOPHUS CYSTIGNATHOIDES Cope, Proc. Amer. Phil. Soc., 1879, p. 268; *Phyllobates cystignathoides* Cope, l. c., 1877, p. 89.
Potrero, near Cordova, Vera Cruz, *Sumichrast.*

Malachylodes Cope.

roc. Amer. Philos. Soc., 1879, p. 264.

ALACHYLODES GUTTILATUS Cope, loc. cit.
? Guanajuato *Dugés.*

Liuperus Dum. Bibr.

rp. Générale, viii, p. 420.

IUPERUS NITIDUS Peters, Monatsber. Berlin. Akad., 1869, p. 878.
Puebla, *Berkenbusch.*

Leptodactylus Fitz.

Class. Rept., p. 38; Girard, U. S. Wilkes Exploring Exped., Herpetology; Boulenger, Catal. Batr. Sal. B. M., 1882, p. 237; *Cystignathus* Wagler, System der Amphibien, 1830, p. 203; Dum. Bibr., Erp. Gén., viii, p. 392; Günther, Catal. Batr. Sal. Brit. 58, p. 26.

LEPTODACTYLUS GRACILIS Dum. Bibr., viii, p. 406; D'Orbigny, Voy. Amér. Mérid., pl. xiii, figs. 5–7; Cope, Proc. Amer. Philos. Soc., 1869, p. 162; *Cystignathus fragilis* Brocchi, Bull. Soc. Philom. Paris (7), p. 182; *Leptodactylus fragilis* Brocchi, Miss. Sci. Mexique., Batr., p. 19, pl. 5, fig. 2.
Tehuantepec and Vera Cruz, *Sumichrast.*

LEPTODACTYLUS LABIALIS Cope, Proc. Amer. Philos. Soc., 1877, p. 90.
Habitat uncertain; probably a part of Sumichrast's collection.

LEPTODACTYLUS MICROTIS Cope; Boulenger, Catal. Batr. Sal. Brit. Mus., 1882, p. 244; *Cystignathus microtis* Cope, Proc. Amer. Philos. Soc., 1879, p. 265.
Guanajuato, *Dugés.*

LEPTODACTYLUS PERLAEVIS Cope; Boulenger, Catal. Batr. Sal. Brit. Mus., 1882, p. 25
Cystignathus perlaevis Cope, Proc. Amer. Philos. Soc., 1879, p. 269.
West Tehuantepec, *Sumichrast.*

LEPTODACTYLUS MELANONOTUS Hallowell, Proc. Acad. Phila., 1860, p. 485; *Cystign*
thus melanonotus Hallowell, Proc. Acad. Phila., 1860, p. 485; Cope, Proc. Amer
Philos. Soc., 1879, 269.
Costa Rica, *Riotti;* Nicaragua, *Stimpson;* Tehuantepec, *Sumichrast;* Mazatlan, *Bi*
choff.

Cystignathus Wagler.

Natürl. Syst. der Amphibien, 1830, p. 202; *Gnathophysa* (Fitz.) Cope, Nat. Hist. Revie
Lond., 1865, 112; Journ. Acad. Phila., 1866, p. 96.

CYSTIGNATHUS PENTADACTYLUS Laur.; Peters, Monatsber. Ak. Wiss. Berlin, 1872,
198; Lund; *Rana ocellata* Schneider, Merrem; Gravenhorst Deliciae 42; *Rana p*
tadactyla Laurenti, Specimen, 32; *Rana gigas* et *labyrinthica* Spix, Test. Ran. T
Cystignathus labyrinthicus Dum. Bibr., viii, 407; Guichenot Castelnau, Voyage
Amérique Mérid., *Pleurodema labyrinthicum* Günther, Catal. Brit. Mus., p. 31; *G*
thophysa labyrinthica Cope, Nat. Hist. Rev., 112.
E. Costa Rica, *Gabb.*

FIRMISTERNIA.

ENGYSTOMIDÆ.

Engystoma Fitzinger.

Dum., Bibron, Erp. Gén., viii, p. 738.

ENGYSTOMA USTUM Cope, Proc. Phila. Acad., 1866, p. 131; *Systoma ustum* Cope, Jou
Acad. Phila., 1867, 194; *Engystoma mexicanum* Peters, Monatsber. Berlin. Akaden
1869, p. 881.
Guadalajara, West Mexico, *I. I. Major:* Vera Cruz, *Sumichrast;* Coatzacoalcos,
Streets: Guanajuato, *Dugès.*

ENGYSTOMA PICTIVENTRE Cope, Proc. Amer. Philos. Soc., 1886, p. 272.
Nicaragua, *Bransford.*

PHRYNISCIDÆ.

Hypopachus Keferstein.

Nachrichten Akad. Gottingen, 1867, 352; Cope, Journ. Acad. Phila., 1875, p. 101.

HYPOPACHUS VARIOLOSUS Cope, Proc. Amer. Philos. Soc., 1869, p. 166; *Engystoma va*
losum Cope, Proc. Acad. Phila., 1867, 194, 1866, 131; *Hypopachus Seebachii* Kefers
Nachr. K. Ges. d. Wiss. Univ. zu Göttingen, 1868, p. 353, pl. ix, figs. 1–2.
Syn. *Hypopachus variolosus* Cope.
Costa Rica, *Seebach;* Nicaragua, *Bransford;* Guadalajara, *Dugès.*
Syn. *Engystoma cyanophlyctis* Cope; *Hypopachus cyanophlyctis*, Proc. Amer. Philos. So
1887, p. 156.
Tamaulipas—Vera Paz, near the mouth of Chacamas R., *Hayes;* Orizaba, *Sallé.*

Atelopus Dum. Bibr.

Syn. [illegible] Cope, Journ. Acad. Phila., 1867, p. 196.

Atelopus varius Shaw in Naturalist's Miscellany, 3, Arvi., Amphib., p. 16; *Phryni*
varius Marcus Natuurk. Verh. Holland. Maatsch. Wetens. Haarlem, 1856, p. 41; *Phrynisc*
varius Günther Catal. Batr. Sal. Brit. Mus. 1858, p. 45; *Atelopus varius* Cope, Journ. Acad. Phila
1875, p. 102.
Costa Rica, *Gabb.*

DENDROBATIDÆ.

Dendrobates Wagler.

Natürl. Syst. Amphib., 1830, p. 202; *Hylaplesia* "Boie"; Günther, Catal. Batr. Sal. Brit. Mus., 1858, p. 124 (not of Boie).

DENDROBATES TINCTORIUS Wagler; Steindachner, Verhandl. K. K. Zoolog.-Botan. Ges. Wien, 1864, p. 260.

Subspecies AURATUS Girard; *Dendrobates auratus* Girard; U. S. Astron. Exped., ii, p. 209; Steindachner, l. c., pl. xiii, figs. 7–7*d*; *Phyllobates auratus* Grd., Proc. Acad. Nat. Sci. Phila., vii, 1854, p. 226.

Panama; Costa Rica, *Gabb;* "West coast Central America;" Nicaragua, *Moser, Bransford.*

DENDROBATES TRUNCATUS Cope; *Phyllobates truncatus* Cope, Proc. Acad. Phila., 1860, 372; *Hylaplesia truncata* Cope, l. c., 1863, p. 49.

Panama.

DENDROBATES TALAMANCÆ Cope, Journ. Acad. Phila., 1875, p. 102, pl. xxiii, fig. 6.

Cold Harbor, eastern coast of Costa Rica, *Gabb.*

DENDROBATES LUGUBRIS Schmidt, Denkschriften Wienen Akad., 1858, p. 250; Günther, Catal. Batr. Sal. Brit. Mus., p. 125.

Veragua, *Warczewicz.*

DENDROBATES TYPOGRAPHUS Keferst., Archiv f. Naturgeschichte, 1868, p. 298, pl. ix, fig. 7; Cope, Journ. Acad. Phila., 1875, p. 102; *Dendrobates ignitus* Cope, Proc. Acad. Phila., 1874, p. 68.

Nicaragua, *Bransford, Moser;* E. Costa Rica, *Gabb;* "West coast Central America."

RANIDÆ.

Ranula Peters.

Cope emend., Proc. Acad. Phila., 1866, p. 129; *Pohlia* Steindachner, Reise der Oest. Frig. Novara, Amphib., p. 15, 1867; *Trypheropsis* Cope, Proc. Acad. Phila., 1875, p. 114.

RANULA CHRYSOPRASINA Cope, Proc. Acad. Phila., 1866, p. 130; *Trypheropsis chrysoprasinus* Cope, loc. cit., p. 117; Journ. Acad. Phila., 1875, pl. xxiii, fig. 12.

E. Costa Rica, *Gabb;* Costa Rica, *Riotte;* Ibid, Valley of San José, *Van Patten;* Nicaragua, *Bransford.*

RANULA PALMIPES Cope; *Rana palmipes* Spix; *Pohlia palmipes* Steindachner, Novara Exped. Amphib., p. 15; *Ranula gölmeri* et *Rana affinis* Peters, Monatsberichte Berlin. Akad., 1859, p. 402; *Ranula affinis* Cope, Proc. Acad. Phila., 1866, p. 129; *Rana raillantii* Brocchi, Bull. Soc. Philomath. Paris (7), i, p. 175; Mis. Sci. Mex., Batr., p. ii, pl. ii, fig. 1.

Guatemala, *van Patten, H. Hague;* Coban, *Salvin;* Tehuantepec, *Sumichrast.*

Rana Linn.

Laurenti et Dum. Bibr. emend.

RANA HALECINA "Kalm.", Dum. Bibr., Erp. Gén., viii, p. 351; Boulenger, Catal. Batr. Sal. Brit. Mus., 1882, p. 41; *Rana berlandieri* Baird, U. S. & Mex. Bound. Survey, 1859, ii, Reptiles, p. 27, pl. xxvi, figs. 7–10; Cope, Check-list Batr. Rept. N. Amer.

Subspecies AUSTRICOLA Cope; *Rana lecontei* "B. & G.," Günth. Catal. Batr. Sal. Brit. Mus., p. 15; Brocchi, Bull. Soc. Philom. Paris (7), i, p. 179, et Miss. Sci. Mex. Batr., p. 14, pl. iv, f. 1; Boulenger, Catal. B. Sal. B. M. 2 ed., p. 42; nec Bairdii et Girardii = *R. draytoni* B. et G.; *Rana halecina* Kalm. var. Cope, Proc. Amer. Philos. Soc., 1879, p. 270.

E. Costa Rica, *Gabb;* Guatemala, *Hague;* West coast Central America; Tobasco, *Sumichrast;* Jalapa, *Montesdeoca;* Guanajuato, *Dugés.*

Subspecies HALECINA Kalm. Cope; *Rana berlandieri* Baird.

Monterey Tamaulipas, *Cope;* Tehuantepec, *Sumichrast.*

RANA MONTEZUMÆ Baird, Proc. Acad. Phila., 1854, p. 61; U. S. & Mex. Bound. Survey, ii Report, p. 27, pl. xxxvi, figs. 1–6.

Tobasco, *Berendt;* Tehuantepec, *Sumichrast;* Guatemala, *Hague;* City of Mexico, *Rich, Cope.*

Subspecies CONCOLOR Cope.

Similar to the typical form, but of a uniform fawn-brown color without the spots of the typical form.

Guanajuato, *Dugés.*

REPTILIA.

CROCODILIA.

Crocodilus Laurenti.

Specimen exhib. Synopsin Reptilium, 1768, p. 53.

CROCODILUS AMERICANUS (Plumier), Schneider, Hist. Amph. fasc.. 2, 1801, p. 167; Le Crocodile St. Domingæ, Geoffroy, Ann. Mns. Nat. Hist., 1803, ii, p. 53, pl. xxxvii, fig. 1; Cope, Proc. Amer. Philos. Soc., 1869, p. 161; *Crocodilus acutus* Cuv., Ann. Mus. Nat. Hist., 1807, x, p. 55, pl. i, figs. 3, 14, pl. ii, fig. 2; Geoffroy, Ann. Mus. Nat. Hist., 1807, t. x, p. 67; Cuv. Oss. Foss, 1824, t. v, part 2, p. 55, pl. i, figs. 3, 14, pl. ii, fig. 5; Gray, Synopsis, 1831, p. 60, spec. 8; Dum. et Bibr., Erp. Gén., 1836, t. iii, p. 119; *Crocodilus americanus,* Gray Catal. Tort. Crocod., 1844, p. 60; *Molinia americana* Gray, Synops. Spec. Rec. Crocod., 1862, Trans. Zool. Soc., Lond., 1867, t. vi, p. 151; *C. americanus* Bocourt, Miss. Sci. au Mex., iii, p. 30, pl. viii, figs. 7–7*a*, pl. ix, fig. 1.

Subspecies PACIFICUS Bocourt, Miss. Sci. au Mex., iii, p. 31, pl. ix, figs. 5–5*a*, 5*b*.

Nagualate, Western Guatemala, *Bocourt;* Tehuantepec, *Sumichrast.*

Subspecies MEXICANUS, *Crocodilus americanus,* var., Gray, Cat. Tort. Croc. B. M., 1844, p. 60; *Molinia americana,* var., Gray, Synops. Spec. Rec. Croc., 1862, and Trans. Zool. Soc., 1867, t. vi, p. 151; *C. mexicanus* Bocourt, Miss. Sci. au Mex., iii, p. 34, pl. viii, figs. 3–3*a*.

Tampico, *Montluc.*

CROCODILUS MORELETII A. Dum., Cat. Meth. Coll. Rept. M. P., 1851, p. 28, and Arch. de Mus., 1852, t. vi, p. 146; *Alligator lacordairei* Prud. du Borre, Acad. Roy. Belgique (extr. bull., 2d ser., 1869, t. xxviii, No. 7, p. 111); *C. moreletii* Bocourt, Miss. Sci. au Mex.. p. 37, iii part, pl. viii, figs. 1–1*a*, and ix, figs. 2–2*a*, 2*b* and 3.

Peten, Flores, Belize, Polochic, Guatemala, *Morelet.*

Jacare Gray.

Cœman Gray.

JACARE PUNCTULATA Spix; *Jacaretinga punctulatus* Spix, Anim. Nov., p. 2, t. 2; *Alligator punctulatus,* Dum. Bibr., i, 91; Günther, Biol. Centr. Amer. Rept., p. 21; *Jacare chiapasanus* Bocourt, Journ. Zool., 1876, p. 400.

Chiapas, *Bocourt.*

NOTE.—The *Alligator mississippiensis* ranges to the mouth of the Rio Grande River, but has not been found beyond it to the southward.

TESTUDINATA.

LYSOSTERNA.

CISTUDINIDÆ.

Cistudo Fleming.

um. et Bibr., Erp. Gén., ii, p. 207.

ISTUDO MEXICANA Gray; *Onychotria mexicana* Gray, Proc. Zool. Soc., 1849, p. 17, and *Cistudo mexicana*, Catal. Shield, Rept. Brit. Mus., 1855, p. 40; *Cistudo triunguis* Agassiz, Contrib. Nat. Hist. U. S. America, 1857, p. 445.

Tampico, *Bocourt.*

CLIDOSTERNA.

EMYDIDÆ.

Chelopus Rafinesque.

Nasemys, *Calemys*, and *Actinemys* Agassiz.

HELOPUS AREOLATUS A. Dum.; Cope, Proc. Acad. Phila., 1866, p. 123; *Emys arcolata* A. Dum., Catal. Meth. Coll. Mus., 1851, p. 10, and Des. Rep. Nov. Imp. Conn. (Arch. Mus., 1852, t. vi, p. 223, pl. xiv).

Peten, *Morelet;* Belize, *Parsons.*

HELOPUS PUNCTULARIUS Daudin; Cope, Proc. Acad. Phila., 1865, 185; *Testudo punctularia* Daud.; *Emys scabra* Bell, Gray, Linn. (fide Agassiz); *Geoclemmys callocephalus* Gray, Proc. Zool. Soc. Lond., 1863, 254; *Rhinoclemmys scabra* Gray, Proc. Zool. Soc. Lond., 722.

Yucatan, *Schott;* Tobasco, *Berendt.*

HELOPUS GABBII Cope, Journ. Acad. Phila., 1875, p. 153.

Costa Rica, *Gabb.*

HELOPUS FUNEREUS Cope, Journ. Acad. Phila., 1875, p. 154.

Costa Rica, *Gabb.*

HELOPUS PULCHERRIMUS Gray; *Emys pulcherrima* Gray, Catal. Shield Rept. B. M., p. 25, t. 25; *Callichelys pulcherrima* Gray, Am. Mag. N. H., 1863, p. 181; *Rhinoclemmys pulcherrima* Gray, Am. Mag. N. H., 1873, p. 145.

W. Mexico Presidio, *Forrer.*

HELOPUS INCISUS Bocourt, Journ. Zool., 1876, p. 387; *Emys incisa*, Boc. Ann. Sci. Nat., 1868, 121; Miss. Sci. Mexique, iii, p. 11, pls. i and ii; *Rhinoclemmys frontalis* Gray, Ann. Mag. Nat. Hist., 1873, xi, p. 144.

Pacific coast of San Salvador; Mount of Conchavona, *Bocourt.*

HELOPUS RUBIDUS Cope, Proc. Am. Philos. Soc., 1869, p. 148; Proc. Acad. Phila., 1869, p. 161; *Rhinoclemmys mexicana* Gray, Proc. Zool. Soc. Lond., 1870, 659–723; Supp. Catal. Shield Rept., p. 30; *Chelopus mexicanus* Boc., Journ. Zool., 1876, 387.

Nicaragua, *MacNiel;* Tehuantepec, *Sumichrast.*

Pseudemys Gray.

Pseudemys and *Trachemys* Agassiz, Contr. Nat. Hist. U. S.

PSEUDEMYS ORNATA Bell; *Callichelys ornata* Gray, Supp. Catal. Shield Rept., p. 48; *Emys venusta* Gray, Catal. Shield Rept., Brit. Mus., 1855, p. 24, tab. xii, *a*; *Emys venusta* Bocourt, Miss. Sci. Mex., iii, p. 131.

Mazatlan, *Colley, Forrer;* Presidio, *Forrer;* Honduras, *Dyson;* Costa Rica, *Gabb;* Panama, *Druce;* Yucatan *Morelet;* Belize, Rio Pioche, *Miss. Scientifique.*

PSEUDEMYS CATASPILA Günther, Biol. Centr. Amer. Zool., Reptiles, p. 4, tab. vi, fig. B; *Emys ornata* Gray, pt., Catal. Zool. B. M., 1884, p. 22; Catal. Shield Rept., 1855, p. 24, fig. 12; *Callichelys ornata*, pt., Gray, Ann. Mag. Nat. Hist., 1863, p. 176.
Mexico, ? ——.

PSEUDEMYS UMBRA Bocourt, O'Shaughnessy, Zool. Record, xiii, Rept., p. 6; *Emys grayi* Bocourt, Miss. Sci. Mex., iii, p. 13, pl. iii, figs 2, 2*a*, nec Guntheri; *Emys callirostris* Boc., Journ. Zool., 1876, 387, nec Grayi; *Emys concinna* Gray, nec Holbrookii, Am. Mag. Nat. Hist., 1873, 110.
Coast of Guatemala, *Bocourt;* Tehuantepec, *Sumichrast.*

PSEUDEMYS SALVINI Günther; *Emys salvini* Günther, Biol. Amer. Centr., Reptiles, p. 4, tab. ii and iii.
Guatemala, *Salvin.*

PSEUDEMYS CALLIROSTRIS; *Emys callirostris* Gray, Catal. Shield Rept., Brit. Mus., 1855, p. 25, pl. xii B; *Callichelys callirostris* Gray, Am. Mag. Nat. Hist., 1863, p. 181.
W. Central America, *Gray.*

PSEUDEMYS MOBILIENSIS Holbrook; *Emys mobilicnsis* Holbrook, N. Amer. Herp., i, p. 71, t. 9; *Ptychemys mobiliensis* Agassiz.
Cadereita, Nuevo Leon, *Agassiz.*

Dermatemys Gray.

Ann. and Mag. Nat. Hist., 1847, p. 60; Proc. Zool. Soc. Lond., 1847, p. 55; Catal. Shield Rept., Brit. Mus., 1855, p. 49; Proc. Zool. Soc., 1864, p. 125; *Chloremys* Gray, Supplement to Catal. Shield Reptiles Brit. Mus., p. 49.

DERMATEMYS MAVEI Gray, loc. cit.; Catal., Shield Rept. Brit. Mus., 1855, p. 49, pl. xxi; Preudhomme de Borre, Acad. Roy. Belgique (extr. bull., 2 ser., t. xxviii, 1 869, p. 116); Bocourt, Mission Sci. au Mex., iii, Rept., p. 17, pl. vii, figs. 2, 2*a*; *Emys berardii* A. Dum., Catal. Rept., 1851, p. 11, and Archiv. de Mus., 1832, t. vi, p. 231, pl. xv; *Ptychemys berardii* Agassiz, Cont. Nat. Hist. U. S., 1857, p. 434.
Belize, *Bocourt;* Tobasco, *Berendt.*

DERMATEMYS ABNORMIS Cope, Proc. Acad. Phila., 1868, 120; *Chloremys abnormis* Gray, Supplement to Catal. Shield Reptiles Brit. Mus., p. 50.
Belize, *Parsons.*

CINOSTERNIDÆ.

Cinosternum Wagler.

CINOSTERNUM CRUENTATUM A. Dum., Cat. meth. des Rept. Mus., 1851, p. 16, and Description des Reptiles nov. and imp. connus, arch. du Mus., 1852, t. vi, p. 238, pl. xvi; *C. mexicanum* Leconte, Proc. Acad. Phila., 1854, p. 182; *C. shavianum* (Agass.) Bocourt, Journ. Zoöl., 1876, 397, nec Bellii.
Mexico and Central America, *Duméril;* Chiapas, *Sumichrast.*

CINOSTERNUM TRILIRATUM Lec., Proc. Acad. Phila., 1859, 6.
Vera Cruz, *Pease.*

CINOSTERNUM ALBOGULARE Bocourt, Miss. Sci. au Mex., iii, p. 24.
San José, Costa Rica, *Bocourt.*

CINOSTERNUM LEUCOSTOMUM A. Dum., Catal. Meth. Coll. Rept. Mus., 1851, p. 17, and Descr. Rept. nov. (Arch. de Mus., 1852, t. vi, p. 239, pl. xvii); Bocourt, Miss. Sci. au Mex., iii, 1870, p. 25; Günther, Biol. Amer. Centr. Zoöl. Rept., p. 17, pl. xvii.
Mexico and Guatemala; Vera Paz, *Morelet;* Gulf Hondura[illegible] *Gabb;* Nicaragua, *Bransford;* Tobas[illegible]

CINOSTERNUM HIRTIPES Wagler, Descr. and Icones Amphib., 17, 1833, pl. xxx; Dum. et Bibr., Erp. Gén., t. ii, p. 370; Bocourt, Miss. Sci. au Mex., iii, p. 25; *C. henrici* Leconte, Proc. Acad. Phila., 1859, 4; Cope and Yarrow in Report U. S. G. G. Survey W. of 100th Mer., v. Zoöl., p. 583, t. 16.

City of Chihuahua, *Wilkinson;* Guanajuato, *Dugés;* Colima, *Xantus;* Mazatlan and Tres Marias Id., *Forrer.*

CINOSTERNUM INTEGRUM Leconte, Proc. Acad. Phila., 1854, p. 183; Günther, Biologia Centr. Amer. Zoöl., Reptiles, p. 16.

"Mexico," ? Vera Cruz, *Pease.*

CINOSTERNUM EFFELDTII Peters, Mon. Ber. Akad. Berlin, 1873, p. 603; Günther, Biol. Centr. Amer. Rept., p. 16. ? *C. berendtianum* Cope, Proceeds. Acad. Phila., 1865, 189.

Vera Cruz, *Peters.*

CINOSTERNUM BREVIGULARE Günther, Biol. Centr. Amer., Reptiles, p. 17, pl. xviii, f. A., May, 1885.

Playa Vicenté, *Sallé.*

CINOSTERNUM POSTINGUINALE Cope, *Cinosternum leucostomum* "Dum.," ? Cope Journ. Acad. Phila., 1875, 153, nec Dumerilii. *Cinosternum brevigulare,* Cope, Proc. Amer. Philos. Soc., 1885, June, p. 389, nec Güntheri, *supra.*

E. coast Costa Rica, *Gabb.*

CINOSTERNUM COBANUM Günther, Biol. Centr. Amer. Zoöl., Rept., p. 18, tab. xviii B.; Guatemala, *Salvin;* Cababon, *Sarg.*

Staurotypus Wagler.

Nat. Syst. Amphib., 187, 1830.

STAUROTYPUS TRIPORCATUS Wagler, Dum. et Bibr. Erp. Gén., t. ii, p. 356.

East coast of Mexico; Tobasco, *Berendt.*

STAUROTYPUS SALVINI * Gray, Bocourt, Miss. Sci. Mexique, iii, Reptiles, p. 22, pl. v, f. 3, 1870; Günther, Biologia Centrali Americana, 1885, Rept., p. 11; *Stauremys salvini* Gray, Proc. Zool. Soc. Lond., 1864, p. 27; Suppl. Cat. Shield Rept., 1870, 65; *Claudius severus* Cope, Proc. Acad., Phila., 1872, p. 24, teste Günther; *Claudius pictus* Cope, l. c., p. 26.

Guatemala, *Salvin;* Vera Paz, *Bocourt;* Tehuantepec, *Sumichrast.*

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* Dr. Günther, after examination of several specimens of this species, comes to the conclusion that the *Claudius severus* is not different, and that the genus Stauremys of Gray must be united with Staurotypus. As Dr. Günther finds Gray's definitions of both his species and genus to be only applicable to certain individuals, or to be unreliable, his conclusions are accepted in this catalogue, and the supposed forms united.

Another observation of Günther in the same work (Biologia Centrali-Americana), requires notice. He remarks that he does not find the characters of the genus Claudius sufficiently distinct from Staurotypus. As I at one time, without full investigation, placed the *Staurotypus salvini* in Claudius, I have given some support to such a view. On examination of the plastron of the two species, I now find that they not only belong to different genera, but to different families and different suborders. Staurotypus is clidostern, with the plastron and carapace firmly united by close suture. In this division it enters the Cinosternidæ, having no mesosternal bone. On the other hand, Claudius is one of the Chelydridæ, the plastron having only contact with the carapace by free digitations (Dactylosterna), and there is a large mesosternal bone. Its near ally is Chelydra.

DACTYLOSTERNA.

CHELYDRIDÆ.

Claudius Cope.

Proc. Acad. Phila., 1865, p. 187, 1872, p. 24, pars; Bocourt, Miss. Sci. Mexique, Rept., p. 19.

CLAUDIUS MEGALOCEPHALUS Bocourt, Ann. Sci. Nat. Zool., 1868, x, p. 122; Proc. Acad. Phila., 1872, p. 27; *C. angustatus*, "Cope," Bocourt, Miss. Sci. au Mex., Zool. Rept., p. 20, pl. iv, figs. 1, 2, 3, 4.
Mexico, *Bocourt.*

CLAUDIUS ANGUSTATUS Cope, Acad. Phila., 1865, p. 187; Proc. Amer. Phil. Soc., 1869, pl. ix.
Tobasco, *Berendt.*

Chelydra Schw.

Chelonura Flem.; *Emysaurus*, Dum. et Bibr.

CHELYDRA SERPENTINA Linn., Bocourt, Miss. Sci. au Mex., iii, pl. v, fig. 1.
Tehuantepec, *Sumichrast;* Guatemala, *Bocourt.*

CHELYDRA ROSSIGNONII Bocourt, Miss. Sci. au Mex., iii, p. 18, pl. v, fig. 2.
Pansos, Guatemala, *Bocourt.*

CHELONIIDÆ.

Chelonia Brongniart.

CHELONIA IMBRICATA Linn., Dum. Bibr., Erp. Gen., ii, p. 547.
Lower California, *Comision Geographica.*

CHELONIA AGASSIZI Dum. et Boc., Mission Scientif. au Mexique, iii, p. 26, pl. vi.
Nagualate, *Guatemala;* Lower Calfornia.

ATHECÆ.

SPHARGIDIDÆ.

Sphargis Merrem.

SPHARGIS CORIACEA Rondelet; Holbrook, N. Am. Herp., ii, p. 45.
E. Costa Rica, *Gabb;* Guaymas, Sonora (description in letter to Prof. Baird.—*E. Cope.*)

LACERTILIA.

The arrangement adopted in this catalogue is in general that of my system published in 1864,* but I have subordinated the divisions somewhat differently. The consists chiefly in distributing the divisions of the group I then proposed under the name of Pleurodonta, and regarding them as of equal rank with the other three primary suborders—Acrodonta, Nyctisaura, and Opheosauri. This distribution establishes five additional suborders, and two new ones are added, the Geccovarani and the Anguisauri. The former of these is based on characters brought out by Mr. Boulenger in his essay on the classification of the Lacertilia;† the latter is made necessary by a different estimation of the characters I described in the memoir above men-

*Proc. Acad. Phila., 1864, p. 224.
†Ann. Mag. Nat. Hist., 1884, p. 117.

ned. The number of suborders is thus eleven, and the families they embrace num-
r twenty-two. For the characters of five of these families I am indebted largely to
, Boulenger.

As elsewhere, the orders and families of Lacertilia cannot be arranged in a linear
ies. There are three lines whose terminal groups are the Chamæleontidæ, the
eonidæ, and the Scincidæ, respectively, and between these most of the families can
arranged. The suborders and families are as follows:

-Proötic not produced beyond arched body; dentition acrodont; olfactory lobes
not underarched; two suspensoria;
clavicle nor mesosternum; no columella; tongue papillose, extremity sheathed.
I. *Rhiptoglossa.*
clavicle proximally simple; an anchor-shaped mesosternum; a columella; tongue
papillose, not sheathed ..... II. *Acrodonta.*
,—Proötic bone not produced beyond arched body; dentition pleurodont; olfactory
lobes not underarched; two suspensoria;
clavicle proximally simple; an anchor-shaped mesosternum; a columella; tongue
papillose, not sheathed..... III. *Iguania.*
I.—Proötic bone produced beyond arched body; dentition pleurodont, or nearly so;
two suspensoria.
a Clavicle simple proximally; olfactory lobes not underarched by frontal.
esosternum cruciform; tongue papillose ..... IV. *Diploglossa.*
aa Clavicle proximally simple; olfactory lobes underarched by frontal.
ertebræ procoelous; tongue smooth..... V. *Thecaglossa.*
ertebræ amphicoelous; tongue papillose..... VI. *Geccovarani.*
aaa Clavicle proximally expanded; olfactory lobes underarched by os frontale.
ongue papillose or smooth..... VII. *Nyctisaura.*
aaaa Clavicles, when present, expanded proximally; olfactory lobes not under-
arched.
lavicles, mesosternum, and sternum present; surangular distinct; tongue scaly.
VIII. *Leptoglossa.*
lavicles, mesosternum, and sternum absent; tongue scaly..... IX. *Typhlophthalmi.*
V.—Proötic bone produced beyond arched body; one suspensorium (=opisthotic
wanting); pelvic arch rudimentary or wanting.
rontal bone underarching olfactory lobes; supraoccipital gomphosis internal; no
orbitosphenoid..... X. *Anguisauri.*
rontal bone underarching olfactory lobes; supraoccipital gomphosis external; an
orbitosphenoid..... XI. *Opheosauri.*

The families of these suborders are the following:

I.—Rhiptoglossa.

There is but one family of this suborder, the Chamæleontidæ, with the following
aracters:

-rietal arch elevated, consisting of the squamosal and parietal bones; splenial bone
sone; toes short, presenting in opposition to each other..... 1. *Chamæleontidæ.*

This family is confined to Africa and Madagascar.

II.—Acrodonta.

But one family represents this suborder.

rietal arch not elevated, consisting of parietal and opisthotic; toes not opposable,
directed forwards..... 2. *Agamidæ.*

III.—Iguania.

urangular bone absent ..... 3. *Anolidæ.*
urangular bone present..... 4. *Iguanidæ.*

IV.—Diploglossa.

Cranial arches present; mesosternum cruciform; teeth pleurodont; temporal fossa roofed; tongue not sheathed at tip.....5. *Zonuridæ.*
Cranial arches absent; pre and postfrontal bones uniting above orbit; surangular, articular, and angular bones not distinct; tip of tongue not retractile. 6. *Pygopodidæ.*
Cranial arches present; mesosternum cruciform; teeth pleurodont; temporal fossa roofed; osteodermal plates; tip of tongue sheathed.....7. *Anguidæ.*
Cranial arches present; mesosternum cruciform; teeth pleurodont; temporal fossa not roofed; no osteodermal plates; tip of tongue sheathed .....8. *Xenosauridæ.*
Postfrontosquamosal arch wanting; mesosternum without transverse elements; teeth half pleurodont.....9. *Helodermidæ.*

V.—Thecaglossa.

Postorbital arch incomplete; Meckel's groove open; nasal bones united; temporal fossa not roofed.....10. *Varanidæ.*

VI.—Geccovarani.

Postorbital and postfrontosquamosal arches wanting; interclavicle minute; nasal bones united; tip of tongue not retractile; occipital condyle divided. 11. *Uroplatidæ.*

VII.—Nyctisaura.

Vertebræ procœlous; parietal bones united .....10. *Eublepharidæ.*
Vertebræ amphicœlous; parietal bones separate .....11. *Gecconidæ.*

VIII.—Leptoglossa.

α. One premaxillary bone:
Parietal bones distinct; temporal fossa roofed; no osteodermal plates.12. *Xantusiidæ.*
Parietals united; temporal fossa not roofed; no osteodermal plates .....13. *Teidæ.*
Parietals united; temporal fossa roofed; no osteodermal plates .....14. *Lacertidæ.*
Parietals united; temporal fossa roofed; osteodermal plates.....15. *Gerrhosauridæ.*
$\alpha\alpha$. Premaxillary bones two:
Parietals united; temporal fossa roofed; osteodermal plates .....16. *Scincidæ.*

IX.—Typhlophthalmi.

Two premaxillaries; arches present; occipital segment closely articulated; eye distinct .....17. *Acontiidæ.*
One premaxillary; arches wanting; occipital loosely attached; eye concealed by epidermis .....18. *Anelytropidæ.*

X.—Anguisauri.

Tongue papillose; one premaxillary; no columella; no arches; occipital closely articulated; eye distinct .....19. *Aniellidæ.*

XI.—Opheosauri.

Teeth half pleurodont; anterior limbs present.....20. *Chirotidæ.*
Teeth half pleurodont; no fore limbs.....21. *Amphisbænidæ.*
Teeth acrodont; no fore limbs.....22. *Trogonophidæ.*

NYCTISAURA.

GECCONIDÆ.

Gonatodes Fitz.

ystema Reptilium, p. 91, 1843; Cope, Proceeds. Acad. Phila., 1863, p. 102; Boulenger, Catal. Liz. Brit. Mus., i, 1885, p. 56; *Gymnodactylus* Dum. Bibr., Erp. Gen., iii, p. 408, pars, nec Spixii.

GONATODES ALBIGULARIS Dum., Bibr. de la Sagra, Cuba, Erp. Générale, iii, p. 415.
Nicaragua, *MacNiel.*

Subspecies FUSCUS Hallow., *Stenodactylus fuscus* Hallow., Journ. Acad. Phila., 1855, p. 33; *Gymnodactylus fuscus* A. Dum., Arch. Mus., 1856, t. viii, p. 477; Bocourt, Miss. Sci. au Mex., part iii, p. 48, pl. x, fig. 5.
Nicaragua, *MacNeill.*

Sphærodactylus Cuvier.

Gray, Catal. Liz. Brit. Mus., 1845, p. 168; Cope, Proc. Acad. Phila., 1861, p. 497.

SPHÆRODACTYLUS GLAUCUS Cope, Proc. Acad. Phila., 1865, p. 192; Journ. Acad. Phila., 1875, p. 118; Bocourt, Miss. Sci. au Mex., iii, p. 46.
E. Costa Rica, *Gabb;* Vera Paz, *Godman;* Peten, *Berendt;* Tobasco, *Berendt;* Tehuantepec, *Sumichrast;* Belize, *Meehling;* Yucatan, *Schott;* Coatzacoalcos R., *Streets.*

SPHÆRODACTYLUS ANTHRACINUS Cope, Proc. Acad. Phila., 1861, p. 500; Bocourt, Miss. Sci. au Mex., iii, p. 46,
Jalapa, *Pease;* "Mexico," *Berkenbusch.*

SPHÆRODACTYLUS LINEOLATUS Lichtenstein, Nomencl. Rept. Amphib., 1856, p. 6; Bocourt, Miss. Sci. au Mexique, part iii, p. 46; Boulenger, Catal. Lac. Brit. Mus., 1885, i, p. 221; *S. millepunctatus* Hallow., Proc. Acad. Phila., 1860, p. 488; Cope, l. c., 1861, p. 499; Bocourt, Miss. Sci. au Mex., iii, p. 45.
Nicaragua, *Stimpson;* Veragua, Central America, *Peters.*

SPHÆRODACTYLUS HOMOLEPIS Cope, Proc. Amer. Philos. Soc., 1885, Nov., 1886, p. 277.
Nicaragua, *Bransford.*

Aristelliger Cope.

Proc. Acad. Phila., 1861, p. 496; Boulenger, Catal. Liz. B. M., 1885, i, 146; *Idiodactylus* Bocourt, Mission Scientifique au Mexique, 1870, p. 41.

ARISTELLIGER IRREGULARIS Cope, Proc. Amer. Philos. Soc., 1885, p. 387.
Cozumel Id., Yucatan, *Ridgway.*

ARISTELLIGER PRÆSIGNIS Hallowell, Cope, Proc. Acad. Phila., 1861, p. 496; *Hemidactylus præsignis* Hallow., loc. cit., 1856, p. 222.
? Nicaragua, *Stimpson.*

ARISTELLIGER GEORGEËNSIS Bocourt; *Idiodactylus georgeënsis* Bocourt, Mission Scientifique au Mexique, 1870, p. 41, pl. x, fig. 1 et *a b c d.*
St. George's Island, Belize, *Mission Scientifique.*

Hemidactylus Cuvier.

Dum. Bibr., Erp. Gen., iii, 344.

HEMIDACTYLUS NAVARREI Dugés, Naturaleza Mexico, 1883, p. 309, pl. 7*a.*
West coast, *Dugés.*

Phyllodactylus Gray.

Dum. Bibr., Erp. Générale, iii, p. 388; *Diplodactylus* Gray, Catal. Brit. Mus.

PHYLLODACTYLUS TUBERCULOSUS Weigm. Acta, Acad. Caes. Leop. Carol. Nat. Cur., xvii, pt. 1, p. 241, pl. xviii, fig. 2; Dum. Bibr., iii, p. 396; Bocourt, Miss. Sci. au Mex., iii, p. 43, pl. x, fig. 3–3*a*; *P. xanti* Cope, Proc. Acad. Phila., 1863, p. 102.
Nicaragua, *MacNiel;* Tehuantepec, *Sumichrast;* Coban, *Hague;* Guadalaxara, *J. J. Major;* Durango, *Webb;* Lower California, *Xantus.*

PHYLLODACTYLUS UNCTUS Cope; *Diplodactylus unctus* Cope, Proc. Acad. Phila., 1863, p. 103; Bocourt, Miss. Sci. au Mex., iii, p. 43.
Cape San Lucas, Lower California, *Xantus.*

Thecadactylus Cuvier.

Gray, Catal. Liz. Brit. Mus., 1845, 146.

THECADACTYLUS RAPICAUDUS Houtt; Gray, Catal. Liz. Brit. Mus., 1845, p. 146; *Gecko rapicauda* Houtt, Act. Acad. Haarl., ix, 322, pl. iii, fig. 1; *Platydactylus thecopus* Dum. Bibr. Erp. Gén., iii, p. 306.
E. Costa Rica, *Gabb;* Coban, *Hague;* Yucatan, *Schott;* Guadalaxara, *Major.*

EUBLEPHARIDÆ.*

Boulenger, Catal. Lit. Brit. Mus., 1885, i, p. 229.

Coleonyx Gray.

Annals and Magaz. Nat. Hist., 1845, xvi, p. 162; *Brachydactylus* Peters, Monatsber. Berl. Acad. Wiss., 1863, 41.

COLEONYX ELEGANS Gray, Annals and Magaz. Nat. Hist., 1845, p. 162; Duméril, Arch. der Museum, viii, p. 483, pl. xvii, fig. 6; Cope, Journ. Acad. Phila., 1875, p. 118; Bocourt, Miss. Sci. au Mex., iii, p. 49, pl. x, fig. 7; *Gymnodactylus scapulatus* A. Dum., Catal. Rept. du Museum de Paris, p. 45; *Brachydactylus mitratus* Peters, l. c., p. 42.
Costa Rica, *Zeledon, Peters;* Peten, Guatemala, *Berendt, Morelet;* Yucatan, *Schott;* Presidio Tierra Caliente of Vera Cruz, *Sumichrast.*

IGUANIA.

ANOLIDÆ.

Cope, Proc. Acad. Phila., 1864, p. 228.

Anolis Merr.

ANOLIS BOUVIERI Bocourt, Miss. Sci. au Mex. et dans l'Amerique Centrale, 1874, p. 58, pl. xiv, figs. 8, 8*a*.
Esquintla Guatemala, *Bouvier.*

ANOLIS BACCATUS Bocourt, Miss. Sci. au Mex., 1874, p. 59, pl. xiv, fig. 14.
Mexico, *Sallé.*

ANOLIS GUENTHERI Bocourt, Miss. Sci. au Mex., 1874, p. 61, pl. xix, fig. 15.
? Hab.

ANOLIS LÆVIVENTRIS Weigmann, Herp. Mex., 1834, p. 47; *Dactyloa lævicentris* Weigmann; *A. læviventris* Bocourt, Miss. Sci. au Mex., iii, p. 87, pl. xvi, figs. 1*b*, 1*ba*.
Mexico, *Peters.*

* For a second species of this family see addenda.

ANOLIS INSIGNIS Cope, Proc. Acad. Phila., 1871, p. 213; Journ. Acad. Phila., 1875, p. 120.
Costa Rica, *Van Patten, O'Shaughnessy.*

ANOLIS MICROTUS Cope, Proc. Acad. Phila., 1871, p. 214; Journ. Acad. Phila., 1875, p. 119.
Costa Rica, *Van Patten.*

ANOLIS PACHYPUS Cope, Journ. Acad. Phila., 1875, p. 122; Batr. and Report of Costa Rica, p. 122.
Pico Blanco, Costa Rica, *Gabb.*

ANOLIS RODRIGUEZII Bocourt, Miss. Sci. au Mex., iii, p. 62, pl. xiii, fig. 1*a*.
San Juan River, Nicaragua, *Kennicott, Bransford;* Pansos sur le Polochic, Guatemala, *Bocourt.*

ANOLIS TROCHILUS Cope, Proc. Acad. Phila., 1871, p. 215; Journ. Acad. Phila., 1875, p. 121.
San Jose, Costa Rica, *Van Patten;* Nicaragua, *Bransford;* Buhio Soldado, Panama, *Bransford;* Costa Rica, *Gabb.*

ANOLIS BRANSFORDII Cope, Proc. Acad. Phila., 1874, p. 67.
Nicaragua, *Bransford, Moser.*

ANOLIS AUREOLUS Cope, Proc. Amer. Philos. Soc., 1884, p. 390.
Yucatan, *Schott.* Guatemala, *Hague.*

ANOLIS SALLÆI Günther, Proc. Zool. Soc. London, 1859, p. 421; 1860, p. 453; Bocourt, Miss. Sci. au Mex., iii, p. 90, pl. xiii, fig. 3, et pl. xvi, figs. 21, 21*a*, 21*b*.
Dueñas, Guatemala, *Günther.* St. Augustin, Guatemala, *Bocourt.*

ANOLIS BINOTATUS Peters, Monats. Akad. Wiss. Berlin, 1863, p. 40; Bocourt, Miss. Sci. au Mex., iii, p. 92, pl. xvi, figs. 22, 23.
Rep. Salvador, *Bocourt.*

ANOLIS CUPREUS Hallow., Proc. Acad. Phila., 1860, p. 480; Bocourt, Miss. Sci. au Mex., iii, p. 94.
Nicaragua, *Stimpson, Bransford, MacNiel.*

ANOLIS LONGICAUDA Hallow., Proc. Acad. Phila., 1860, p. 481.
Nicaragua, *Stimpson, MacNiel.*

ANOLIS CYMBOPS Cope, Proc. Acad. Phila., 1864, p. 173; Bocourt, Miss. Sci. au Mex., iii, p. 95.
Vera Cruz, *Brit. Mus.*

ANOLIS USTUS Cope, Proc. Acad. Phila., 1864, p. 172; Bocourt, Miss. Sci. au Mex., iii, p. 96.
Belize, *Brit. Mus.*

ANOLIS CONCOLOR Cope, Proc. Acad. Phila., 1862, p. 180; Bocourt, Miss. Sci. au Mex., iii, p. 96; *Anolis refulgens* Schleg. Hallowell, Proc. Acad. Phila., 1860, p. 480; *Gastrotropis concolor* Cope, Proc. Acad. Phila., 1862, p. 180.
Nicaragua, *Stimpson.*

ANOLIS BIPORCATUS Weigmann, Herp. Mex., 1834, p. 47; Cope, Proceedings Acad. Phila., 1865, p. 197; 1871, p. 215; 1874, p. 68. *Anolis petersii* Bocourt, Miss. Sci. Mex., iii, p. 79, pl. viii, f. 2, et pl. xv, figs. 11, 11*a;* Boulenger, Catal. Liz. Brit. Mus., 1885, ii, p. 66.
Nicaragua, *Bransford;* Vera Cruz, *Sartorius, Sumichrast.*

ANOLIS CHRYSOLEPIS Dum. et Bibr., Erp. Gén., 1837, t. iv, p. 94; Gray, Catal. Liz. Col. Brit. Mus., 1845, p. 207; Dum., Catal. Meth. Col. Report Mus. Paris, 1851, p. 56; Guichenot, Explorat. de l'Amerique Merid., 1855, t. ii, p. 15, pl. iv, fig. 1; Bocourt, Miss. Sci. au Mex., iii, p. 99, pl. xvi, fig. 26.
Mexico, *Bocourt;* Honduras, *Catal. Brit. Mus.*, ed. ii, 1885, p. 90.

ANOLIS CAPITO Peters, *A. Draconura capito* Peters, Monatsber. Akad. Wiss. Berlin, 1863, p. 142; *A. capito* Bocourt, Miss. Sci. au Mex., iii, p. 101, pl. xvi, figs. 2*7*, 2*e*; Cope, Journ. Acad. Phila., 1875, p. 124; *Anolis carneus* Cope, Proc. Acad. Phila., 1864, p. 169.

Costa Rica, *Gabb;* Vera Paz, Guatemala, *Bocourt;* Rio Frijole, Panama, *Bransford;* Nicaragua, *Bransford.*

ANOLIS TROPIDONOTUS Peters, Monatsber. Akad. Wiss. Berlin, 1863, p. 135; *Anolis tropidontus* Peters, Ann. and Mag. Nat. Hist., 1869, p. 273; *Norops auratus* O'Shaughnessy, Ann. and Mag. Nat. Hist., 1869, p. 183; 1869, p. 274; Bocourt, Miss. Sci. au Mex., iii, p. 103, pl. xiii, figs. 6, 6*a*, et pl. xvi, fig. 30.

Orizaba, *Peters, Sumichrast,* et *Bourguet;* Tehuantepec, *Sumichrast.*

ANOLIS UNIFORMIS Cope, Proc. Amer. Philos. Soc., 1885, p. 392.

Guatemala, *Hague;* Yucatan, *Schott.*

ANOLIS METALLICUS Bocourt, Ann. Sci. Nat., 1872; Miss. Sci. Mex. Report, pl. xvii, bis fig. 1.

Mexico, *Bocourt.*

ANOLIS HUMILIS Peters, Monatsber. Akad. Wiss. Berlin, 1863, p. 138; Bocourt, Miss. Sci. au Mex., iii, p. 105, pl. xiii, figs. 7, 7*a*, et pl. xvi, fig. 31.

Veragua, *Peters.*

ANOLIS QUAGGULUS Cope, Proc. Amer. Philos. Soc., 1885, p. 391; 1886, 276.

Rio San Juan Nicaragua, *Kennicott, Bransford.*

ANOLIS HELIACTIN Cope, Proc. Acad. Phila., 1864, p. 172; Bocourt, Miss. Sci. au Mex., iii, p. 106, pl. xiii, figs. 4, 4*a*, 4*b*, 4*c*, et pl. xvi, fig. 32.

Oaxaca, *Sallé.*

ANOLIS CRASSULUS Cope, Proc. Acad. Phila., 1864, p. 173; Bocourt, Miss. Sci. au Mex., iii, p. 82, pl. xvi, fig. 17.

Vera Paz, *Brit. Mus.;* Nicaragua, *Bransford;* Guatemala, *Bocourt.*

ANOLIS LIMIFRONS Cope, Proc. Acad. Phila., p. 178; Bocourt, Miss. Sci. au Mexiq iii, p. 65, pl. xiv, fig. 20.

Veragua, *Mitchill.*

ANOLIS PALPEBROSUS Peters, Monatsber. Berlin Acad. 1873, p. 740.

Chiriqui, *Peters.*

ANOLIS NEBULOSUS Weigmann, Herp. Mex., 1834, p. 47; Zoologie du Mexique, ii 68, pl. xv, fig. 3.

Batopilas Chihuahua, *Wilkinson;* Cuernavaca, *Méhédin;* Oaxaca, Sallé and Bocc Yucatan, *Schott;* Colima, *Dugés;* Mazatlan, *Bischoff;* Guadalaj Xara, *Major* huantepec, *Sumichrast;* Tepexi Puebla, *Comision Geográfica.*

ANOLIS INTERMEDIUS Peters, Monatsber. Akad. Wiss., Berlin, 1863, p. 143; Bo Miss. Sci. au Mex., iii, p. 69, pl. xv, fig. 4; Cope, Journ. Acad. Phila., 1875, Veragua, *Peters;* Costa Rica, *Gabb.*

ANOLIS NANNODES Cope, Proc. Acad. Phila., 1864, p. 173; Bocourt, Miss. Mexique, iii, p. 71, pl. xv, fig. 5.

Tehuantepec, *Sumichrast;* Yucatan, *Schott;* Coban, Guatemala, Godman *Bocourt;* Costa Rica, *Riotte;* Xalapa, *Montes de Oca;* Orizaba, Comisio dor, *Sartorius;* Actopam and Jicaltepec, Vera Cruz, Sumi

ANOLIS JACOBII, Bocourt, Miss. Scien. au Mex., iii, p. 73, pl. xiii, fig. Vera Cruz, *Bocourt;* San Juan River, Nicaragua, Kennicott.

ANOLIS NEBULOIDES Bocourt, Miss. Scien. au Mex., iii, p. 74, pl. Putla, Oaxaca, *Bocourt.*

ANOLIS SALVINI Boulenger, Catal. Lizards Brit. Mus. p. 75. Guatemala, *G*

OLIS BOURGÆI Bocourt, Miss. Scien. au Mex., iii, p. 76, pl. xv, fig. 9.
Huatusco, Vera Cruz, *Peters;* Orizaba, *Bourget.*

OLIS COPEI Bocourt, Miss. Scien. au Mex., iii, p. 77, pl. xv, figs. 10–10*a;* Cope, Journ. Acad. Phila., p. 121, 1875.
Vera Paz, *Salvin, Sarg;* Santa Rosa de Pansos, Guatemala, *Bocourt;* Old Harbor, Costa Rica, *Gabb;* Nicaragua, *Bransford.*

OLIS DOLLFUSIANUS Bocourt, Miss. Scien. au Mexique, iii, p. 84, pl. xvi, figs. 19–19*a.*
St. Augustin, Guatemala, *Bocourt.*

OLIS FULCHRIPES Peters, Monatsber. Berlin Acad., 1873, p. 739; Boulenger, Catal. Liz. Brit. Mus., ii, p. 53.
Chiriqui, *Peters.*

OLIS HOFFMANII Peters, Monatsber. Akad. Wiss., Berlin, 1863, p. 142; Bocourt, Miss. Scien. au Mex., iii, p. 86, pl. xv, figs. 15–16.
Costa Rica, *Hoffmann;* Guatemala, *Hague.*

OLIS TROPIDOLEPIS Boulenger, Catal. Liz. Brit. Mus., ii, p. 56.
Costa Rica, *Godman.*

OLIS SCHIEDII Wiegmann, *Dactyloa schiedii* Weigmann; Herpét. Mex., 1834, p. 48; Mission Scien. au Mex., 1874, p. 61, pl. xiv, fig. 19; *Anolis sericeus* Hallowell, Proc. Acad. Phila., 1856, p. 227.
Coban, Vera Paz, *Bocourt;* Xalapa, *Pease.*

OLIS POLYLEPIS Peters, Monatsber. Berlin Akad., 1873, 738; Boulenger, Catal. Lizards, Brit. Mus., ii, p. 52.
Chiriquí, *Peters.*

OLIS CUMMINGII Peters, Monatsber. Akad. Wiss. Berlin, 1863, p. 140; Bocourt, Miss. Scien. au Mex., iii, p. 89, pl. xvi, fig. 20.
"Mexico," *Peters.*

OLIS GODMANI Boulenger, Catal. Liz. Brit. Mus., ii, 1886, p. 85.
Guatemala, Costa Rica, *Godman.*

OLIS OXYLOPHUS Cope, Batr. and Rept. Costa Rica, Journ. Akad. Phila., 1875, p. 123.
Nicaragua, *Bransford;* Costa Rica, *Gabb.*

OLIS TESSELLATUS O'Shaughnessy, Ann. and Mag. Nat. Hist., 1875, p. 279; Cope, Journ. Acad. Phila., 1875, p. 124.
Costa Rica *O'Shaughnessy.*

OLIS VITTIGERUS Cope, Proceeds. Acad. Phila., 1862, p. 179; *Anolis biporcatus* "Wiegm.," Bocourt, Miss. Sci. Mex. Rept., iii, p. 98, pl. xv, figs. 8–8*a*, nec Wiegmannii.*
Guatemala, *Bocourt, Salvin.*

OLIS DAMULUS Cope, Proc. Acad. Phila., 1864, p. 169.
Hab.

OLIS BECKERI Boulenger, Proc. Zool. Soc. London, 1881, p. 921; Catl. Brit. Mus., Lizards, ii, p. 46.
Yucatan, *Catal. Brit. Mus.*

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*There is apparently some confusion in European works as to the determination of this species and *A. biporcatus* of Wiegmann. The former is supposed by Bocourt, O'Shaugnessy, and Boulenger to be species named *A. biporcatus* by Wiegmann in the Herpetologia Mexicana many years previ-ly. I have on the other hand regarded the large common species of Eastern Mexico as the true *biporcatus;* but M. Bocourt regards it as undescribed, and names it *A. petersii.* Now Wieg-ann's collections were, so far as I am aware, made in Mexico, and it is scarcely likely that this large ecies escaped him. On the other hand the *A. vittigerus* is a Central and South American species, d less conspicuous, and does not occur in Mexico. It is highly probable that Prof. Wiegmann ad not seen it at the time of the writing of the Herpetologia Mexicana (1834). There is nothing in egmann's description which disagrees with the Mexican species, or especially indicates the *A. iporcus.* It looks as though some exchange of labels had taken place in the transmission of the pecimens from Berlin to Paris.

ANOLIS PENTAPRION Cope, Proc. Acad. Nat. Sci., Phila., 1862, p. 178.
Nicaragua, *Bransford.*

ANOLIS SAGRÆI Cocteau, Hist. de l'isle de Cuba, par Ramon de la Sagra, 1843, p. 131, tab. 13, fig. 1; Dum. et Bibr., Erpét. Générale, t. iv, 1837, p. 149; Gray, Cat. Liz. Coll., Brit. Mus., 1845, p. 203; Bocourt, Miss. Scien. au Mexique, iii, p. 80, pl. xv, fig. 14.
St. George's, Belize, *Bocourt;* Yucatan, *Schott;* Cozumel Id., *Ridgway;* Guatemala and Honduras, *Catal. Brit. Mus.*

IGUANIDÆ.

Polychrus Cuvier.

Regne Animal, 1817, p. 4.

POLYCHRUS GUTTUROSUS Berthold, Abh. Gess. Göttingen, iii, 1847, p. 5, pl. i, fig. 1; *P. multicarinatus* Peters, Monatsber. k. Preuss. Akad., 1869, p. 786; Bocourt Miss. Sci. au Mex., pl. xvii, fig. 8; Cope, Journ. Acad. Phila., 1875, p. 124.
Costa Rica, *Peters.*

Basiliscus Laurenti.

Specimen Syn. Reptil., 1768, p. 50.

BASILISCUS PLUMIFRONS Cope, Journ. Acad. Phila., 1875, p. 125, pl. xxv, fig. 1; Boulenger, Catal. Liz. B. M., ii, p. 108.
E. Costa Rica, *Gabb.*

BASILISCUS AMERICANUS Laurenti, specimen, p. 50; Bocourt, Miss. Sci. Mex., 127; Boulenger, Catal. Liz. B. M., ii, 1886, p. 108; *Basiliscus mitratus* Daud., Duméril et Bibr., Erp. Gen. iv, p. 181, 1837; Cope, Journ. Acad. Nat. Sci., 1875, p. 125, pl. xxv, fig. 2; "*Ophryoessa bilineata* Gray, Zoöl. Brechey's Voyage, p. 94"; *Lophosaura goodridgei* Gray, Ann. Mag. Nat. Hist., London, 1852, p. 438; Richardson, Zoölogy Herald, p. 143, pl. xxvi; *Basiliscus goodridgei* Cope, l. c.
Costa Rica, *Peters, Godman.*

BASILISCUS GUTTULATUS Cope, Journ. Acad. Phila., 1875, p. 156.
Buhio Soldado, Panama, *Bransford.*

BASILISCUS VITTATUS Wiegmann, Isis, 1828, p. 373; Wagler., Syst. Amph., 1830, p. 148; *Œdicoryphus vittatus*, l. c., p. 148; Gray, Synops. Report in Griffith's Anim. Kingd., 1831, t. ix, p. 45; *Corythæolus vittatus* Kaup, 1829, Isis, p. 1147; Weigmann, Herp. Mex., pt. 1, 1834, p. 15 et 40, pl. v; *Basiliscus* (*Cristasaura*) *nuchalis* Cope, Proc. Acad. Phila., 1862, p. 181; *Draconura bivittata* Hallow., Proc. Acad. Phila., 1860, p. 482; *Paraloma bivittata* Cope, loc. cit., 1862, p. 181; *Anolis bivittatus* Bocourt, Miss. Sci. au Mex., p. 97.
Vera Cruz, *Sumichrast;* Costa Rica, *Gabb;* Belize, *Mechling;* Yucatan, *Schott;* Nicaragua, *Caldwell, Kennicott;* Tehuantepec, *Sumichrast;* Guatemala, *Hague;* Cozumel Id., *Ridgway;* Colima, *Xantus.*

Corythophanes Boie.

Gray in Griffith's Anim. Kingd., ix, Syn., p. 55; Wiegmann, Herpet. Mexicana, p. 15; *Chamæleopsis* Weigmann, Gray.

CORYTHOPHANES PERCARINATUS Duméril, Arch. Mus. Hist. Nat., t. viii, 1856, p. 518, pl. xx, fig. 3–3*a*.; Bocourt, Miss. Sci. au Mexique, iii, p. 120, pl. xvii, fig. 2.
Escuintla and San José, Guatemala, *Van Patten;* Guatemala, *Morelet;* Coban, Vera Paz, *Bocourt.*

CORYTHOPHANES MEXICANUS Bocourt, Miss. Sci. au Mex., iii, p. 121, pl. xvii, fig. 1; *C. chameleopsis* Dum. et Bibr.; *Chameleopsis hernandesii* Gray, Catal. Brit. Mus., 1845, 194.
Vera Cruz, *Boucard, Comision Geográfica;* Jalapa, *Montes-de-Oca, Sumichrast;* Chiapas, Tehuantepec, *Sumichrast.*

CORYTHOPHANES CRISTATUS Boie, Isis, 1827; Gray, Synops. in Griffith's Anim. Kingd., 1831, t. ix, p. 55; Gravenhorst, Act. Acad. Cæsar Leop. Carol. Nat. Curios., t. xvi, pars. ii, 1833, p. 838, tab. 65, fig. 6x10; Wiegmann, Herp. Mex., pars. i, 1834, p. 15; Duméril et Bibron, Erpétologie Génér., t. iv, 1837, p. 174; Fitzinger, Syst. Report 1843, p. 52; Gray, Catal. Spec. Liz. Coll. Brit. Mus., 1845, p. 194; Aug. Duméril Cat. Meth. Coll. Report, Paris, 1851, p. 60; Arch. Mus. Hist. Nat., t. viii, 1856, p. 517, pl. xx, fig. 1; Cope, Journ. Acad. Phila., 1875, p. 124; Merrem, Bocourt, Miss. Sci. au Mexique, iii, p. 118; *Lacerta ceilonica cristata et pectinata* Seba, 1734, t. i, p. 147, tab. 94, fig. 4; *Agama cristata* Merrem., Syst. Amph., 1821, p. 50; *C. mexicanus* Cope, Proc. Amer. Philos. Soc., 1884, p. 183.

Guatemala, *Hague;* Darien, *Selfridge;* E. Costa Rica, *Salvin;* Peten, *Morelet;* Panama, Pacific side, *Bransford;* Vera Paz, *Gabb.;* Nicaragua, *Bransford, Moser.*

Læmanctus Wiegm.

Herpet. Mexicana, 1835, pp. 16, 45; Dum. Bibr., Erp. Gén., iv, 70 pars; *Læmanctus* Fitzinger, Syst. Rept., 1843, 63; Cope; Boulenger.

LÆMANCTUS SERRATUS Cope, Proc. Acad. Phila., 1864, p. 176; *Læmanctus longipes* Aug. Duméril, Arch. Mus., t. viii, 1856, pl. xxi, figs. 4–4*a*; Bocourt, Miss. Scien. au Mex., iii, p. 116.

Oaxaca, *Ghiesbrecht;* Vera Cruz, *Comision Geográfica.*

LÆMANCTUS ALTICORONATUS Cope, Proc. Acad. Phila., 1865, p. 192; Proc. Amer. Philos. Soc., 1869, pl. xi.

Yucatan, *Schott.*

LÆMANCTUS DEBORREI Boulenger, Bull. Soc. Zool. France, 1877, 465, pl. vii, f. 1.

Vera Paz, *Salvin;* Tobasco, *Boulenger.*

LÆMANCTUS LONGIPES Wiegmann, Herp. Mex., 1834, p. 46, tab. 4; Dum. et Bibr., Erpét. Gén., 1837, t. iv, p. 172; Gray, Catal. Liz. Coll. Brit. Mus., 1845, p. 185; Aug. Duméril, Catal. Rept. Mus. Paris, p. 55; Bocourt, Miss. Sci. au Mexique, iii, p. 114, pl. xvii, fig. 4.

Vera Cruz, *Sumichrast, Sartorius, Mehedin et Boucard;* Coban, Guatemala, *Salvin;* Actopam, *Comision Geográfica.*

Iguana Laurenti.

Spec. Synopsis Rept., 1765, p. 47; Duméril et Bibron, Erp. Gén.

IGUANA TUBERCULATA Laur., Syn., 49; *Lacerta iguana* Shaw, Zool., iii, 199; *I. delicatissima* Latr., R. 155; Daud., Rept., iii, 263 to 40, 277 and 280; *I. carulea* Daud., Rept., iii, 266; Spix., Braz., 7, t. vii; *I. sapidissima* Merrem, Tent., 49; *I. squamosa* Spix., Braz., 5, t. 5; *I. viridis* Spix., Braz., 6, t. 6; *I. emarginata* Spix., Braz., 7, t. 8; *I. lophyroides* Spix., Braz., 8, t. 9.

Subspecies RHINOLOPHA Wiegmann; Cope, Proceeds. Amer. Philos. Soc., 1869, p. 161; Boulenger, Catal. Liz. Brit. Mus., 1885, p. 190; *Iguana rhinolopha* Weigmann, Herp. Mex., pars 1, 1834, p. 44; Bocourt, Miss. Sci. au Mexique, iii, 134; Cope, Journ. Acad. Phila., 1875, p. 124.

Nicaragua, *MacNiel;* Tehuantepec, *Sumichrast;* Costa Rica, *Gabb;* Colima, *Xantus;* Cozumel Id., *Ridgway;* Tobasco, *Laszlo;* Southern Puebla, and Alatorre, Vera Cruz, *Comision Geográfica;* Swan Ids., coast of Honduras, *Cope.*

Ctenosaura Wiegm.

Iba von Oken, 1828, p. 371; Cope, Transac. Amer. Philos. Soc., 1885; *Enyaliosaurus* Gray, Cat. Liz. Br. Mus., 1845, p. 192.

CTENOSAURA HEMILOPHA Cope, Proc. Acad. Phila., 1863, p. 105; Proc. Amer. Philos. Soc., 1885, 266; Boulenger, Catal. Liz. Brit. Mus., ii, 1885, p. 197; *Ctenosaura acanthura* Bocourt, Miss. Sci. Mexique, Rept., p. 138; *Cyclura acanthura* Dum. Bibr., pars, Erp. Gén., iv, p. 224.

Lower California, *Xantus, Botta.*

CTENOSAURA MULTISPINIS Cope, Transac. Amer. Philos. Soc., 1885, p. 267.
Oaxaca, *Sumichrast;* Batopilas, Chihuahua, *Wilkinson.*

CTENOSAURA BREVIROSTRIS Cope, loc. cit., p. 268.
Colima, *Xantus.*

CTENOSAURA TERES Harlan; *Cyclura teres* Harlan, Journ. Acad. Phila., t. iv, 18-25, p. 246, tab. 16; *Ctenosaura pectinata* Wiegm., Herpetologia Mexicana, 1834, p. 42, tab. 2; Duméril et Bibr., Erp. Gén., t. iv, 1837, p. 221; Fitzinger, Syst. Rept., 1843, p. 56; Gray, Catal. Brit. Mus., 1845, p. 49; Cope, Proc. Acad. Phila., 1866, p. 124; Bocourt, Miss. Sci. au Mex., iii, p. 140; Wiegmann, Herpet. Mex., 1834, p. 42; Bocourt, Miss. Sci. au Mex., iii, p. 142; *Ctenosaura armata* Gray, Synopsis in Griffith's Anim. Kingd., t. ix, 1831; *Cyclura acanthura* Sumichrast, Biblioth. Univer. et Rev. Suisse (Arch. des Sciences Phys. Nat., 1864, p. 49).

Nicaragua, *MacNiel;* Tehuantepec, *Sumichrast;* Tampico, *Dallas;* Alatorre, Vera Cruz, *Comision Geográfica;* Vera Cruz, *Méhédin;* Coatzacoalcos, *R. Streets;* Mexico, *Ghiesbrecht;* Colima, *Xantus, Dugés.*

Subspecies BRACHYLOPHA Cope, Proc. Amer. Philos. Soc., 1886, p. 269.
Mazatlan, *Bischoff.*

CTENOSAURA COMPLETA Bocourt, Miss. Sci. du Mexique, iii, Rept., p. 145; Cope, Proceeds. Amer. Philos. Soc., 1885, p. 269; *Cyclura pectinata* Cope, Proc. Acad. Phila., 1866, p. 124; Proc. Amer. Philos. Soc., 1885, p. 388.

Guatemala, *Bocourt;* Yucatan, *Schott;* Cozumel Id., *Ridgway;* San Salvador, *Mus. Scientif.*

CTENOSAURA QUINQUECARINATA Gray, Cope, Pr. Amer. Philos. Soc., 1885, p. 269; Boulenger, Catal. Liz. B. M., 1885, p. 198; *Emyaliosaurus quinquecarinatus* Gray, Catal. Sauria Brit. Mus., 1845, 192; *Cyclura* (*Ctenosaura*) *quinquecarinata* Cope, Proc. Acad. Nat. Sci. Phila., 1869, p. 161.

Tehuantepec, *Sumichrast.*

Cachryx Cope.

Proceeds. Acad. Phila., 1866, p. 124; Boulenger, Catal. Lizards Brit. Mus., 1885, p. 196.

CACHRYX ERYTHROMELAS Boulenger; *Ctenosaura erythromelas* Boulenger, Proceeds. Zool. Soc. London, 1886, p. 241, pl. xxiii.

Habitat ?

CACHRYX DEFENSOR Cope, Proceeds. Acad. Phila., 1866, p. 124; Proceeds. Amer. Philos. Soc., 1869, pl. x; Bocourt, Miss. Sci. Mex., p. 148.

Yucatan, *Schott.*

Enyalioïdes Boulenger.

Catal. Liz. Brit. Mus., ii, 1885, p. 112.

ENYALIOÏDES HETEROLEPIS Bocourt; Boulenger, l. c., p. 114; *Enyalius heterolepis* Boc., Mission Scientif. Mex., Rept., pl. xx, c. f. 14; Ann. Sci. Nat., 1874, art. 4.

Veragua, *Bocourt.*

Dipsosaurus Hallowell.

Proc. Acad. Phila., 1854, p. 92.

DIPSOSAURUS DORSALIS Bd. & Gird.; *Crotaphytus dorsalis* Bd. & Girard, Proc. Acad. Phila., 1852, p. 126; U. S. & Mex. Bound. Surv., 1859, p. 8, pl. xxxii, figs. 7-13.

Lower California, *Xantus.*

Crotaphytus Holbr.

N. Amer. Herpetology, vol. ii, p. 72, 1842.

CROTAPHYTUS COPEI Yarrow, Proc. U. S. Nat. Mus., 1882, p. 441.

Lower California, *Belding.*

CROTAPHYTUS COLLARIS Say; Holbrook, l. c.; *Agama collaris* Say.

City of Chihuahua, *Wilkinson.*

Sauromalus Duméril.

Archives du Museum, viii, 1856, 536; *Euphryne* Baird, Proc. Acad. Phila., 1858, 253.

SAUROMALUS ATER A. Duméril, Arch. Mus., t. viii, 1856, p. 536, pl. xxiii, fig. 3–3*a*; *Euphryne obesa* Baird, Proc. Acad. Phila., 1858, p. 253; U. S. & Mex. Bound. Surv., 1859, p. 6, pl. xxvii; *Sauromalus ater* Bocourt, Miss. Sci. au Mex., iii, Rept., p. 149, pl. xviibis. fig. 11–11*a*, 11*b*.
Lower California, *Duméril.*

Uta Bd. Gird.*

Proc. Acad. Phila., 1852, p. 69; *Urosaurus* Hallowell, Proc. Acad. Phila., 1854, 92; *Phymatolepis* Dum., Arch. du Musée, viii, 548; Bocourt, Miss. Sci. Mexique, Rept., p. 165; *Petrosaurus* Boulenger, Catal. Liz. Brit. Mus., ii, 1885, p. 205.

UTA IRREGULARIS Fischer, Abhandl. Nat-Wiss. Verein, Bremen, vii, 1881, p. 232.
"Mexican Plateau," *Fischer.*

UTA BICARINATA Duméril; Cope, Proc. Acad. Phil., 1864, p. 117; *Phymatolepis* Duméril, Archiv. du Mus., 1856, p. 549, pl. xxiii, figs. 2, 2*a*, 2*b*; Bocourt, Miss. Sci. Mex., 165.
Batopilas, Chihuahua, *Wilkinson;* City of Chihuahua, *Wilkinson;* Guanajuato, *Dugès;* Puebla, *Boucard;* Tehuantepec, *Sumichrast;* Matamoros Puebla, *Mision Geográfica.*

UTA AURICULATA Cope, Proc. Boston Soc. Nat. Hist., 1871, 303.
Socorro, Revillagigedo Ids., *Grayson.*

UTA LATERALIS Boulenger, Am. Mag. Nat. Hist., London, 1883, p. 342; Catal. Liz. Brit. Mus., ii, 1885, p. 214.
Presidio W. Mexico; Tres Marias Is., *Forrer.*

UTA NIGRICAUDA Cope, Proc. Acad. Phila., 1864, p. 176.
Cape St. Lucas, Lower California, *Xantus.*

UTA STANSBURIANA Bd. Gird., Proc. Acad. Phila., vi, 1852, p. 69; Stansbury's Great Salt Lake, 1852, 345, Reptiles, pl. v.
Cape St. Lucas, Lower California, *Xantus.*

UTA THALASSINA Cope, Proc. Acad. Phila., 1863, p. 104; *Petrosaurus thalassinus* Boulenger, Catal. Liz. Brit. Mus., ii, 1885, p. 205.
Cape St. Lucas, Lower California, *Xantus.*

Sceloporus Wiegmann.

Isis, 1828, p. 369; *Tropidolepis* Cuvier, Régne Anim., 2d ed., 1829, t. 2, p. 38.

SCELOPORUS HORRIDUS Wiegmann, Herpetologia Mexicana, pt. i, 1834, p. 50; *Tropidolepidus horridus* Dum. Bibr., Erp. Gén., iv, 1837, 306; Bocourt, Miss. Sci. Mex., p. 178, pl. xviii, 8, 8*a*, 8*b*; *Sceloporous oligoporus* Cope, Proc. Acad. Phila., 1864, p. 177.
Colima, *J. Xantus, A. Dugés;* Guadalaxara, *Major;* Vera Cruz, *Mission Scientifique.*

SCELOPORUS SINIFERUS Cope, Proc. Amer. Philos. Soc., 1869, p. 159; *Sceloporus humeralis* Bocourt, Miss. Sci. Mex., 1875, p. 206, pl. xviii, bis, figs. 3, 3*a*, 3*b*.
Tehuantepec, *Sumichrast;* Oaxaca, *Sallé.*

SCELOPORUS SQUAMOSUS Bocourt, Miss. Sci. Mex., 1875, 212, pl. xviii, bis, 7, 7*a*, 7*b*, 7*c*, xix, fig. 3.
Costa Rica, *Van Patten;* Guatemala, *Miss. Scientif.*

SCELOPORUS UTIFORMIS Cope, Proc. Acad. Phila., 1864, p. 177; Bocourt, Miss. Sci. Mex., 187, p. 208, pl. xviii, bis, 6, 6*a*, 6*b*.
Colima, *J. Xantus, Dugés.*

SCELOPORUS CHRYSOSTICTUS Cope, Proc. Acad. Phila., 1866, p. 125; *Sceloporus cupreus* Bocourt, Miss. Sci. Mex., 1875, p. 210, pl. xviii, bis, 2, 2*a*, 2*b*.
Yucatan, *Schott;* Guatemala, *Van Patten;* Oaxaca, *Boucard.*

*The sole character which distinguishes *Sauromalus* from Uta is the short and obtuse tail. At present the value of this definition appears doubtful, and the genera may have to be united.

SCELOPORUS SCALARIS Wiegmann, Herp. Mex., 1834, p. 52, tab. 8, fig. 2; *Tropidolepis scalaris* Dum. Bibr., Erp. Gén., iv, 1837, p. 310; *Sceloporus scalaris* Baird, U. S. & Mex. Bound. Surv., Reptiles, p. 6; Bocourt, Miss. Sci. Mex., p. 202, 1875, pl. xviii, bis, 9, 9*a*, 9*b*.

Colima, *Dugés;* Cuernavaca, *Mehédin;* City of Mexico, *Cope;* Zacualtipan Hidalgo, *Cope;* Orizaba, *Sumichrast;* Monterey, *Cope;* S. W. Texas, *Marnoch;* Sonora, *Kennerly;* Puebla, *Comision Geográfica.*

SCELOPORUS AENEUS Wiegmann, Herp. Mex., 1834. p. 52; Bocourt, Miss. Sci. au Mex., iii, Report, p. 204, pl. xviii, bis, figs. 4, 4*a*, 4*b;* *Tropidolepis aeneus* Dum. et Bibr., Erp. Gen., t. iv, 1837, p. 309; *Sceloporus aenus* Fitzinger, Syst. Rept., 1843, p. 75; *Tropidolepis aeneus* Gray, Catal. Brit. Mus., 1845, p. 210; Id. Aug. Duméril, Catal. Mus. Paris, 1851, p. 78.

"Mexico," *Boucard;* Jalapa, *Flohr;* Guanajuato, *Dugés;* Puebla, *Comision Geográfica.*

SCELOPORUS VARIABILIS Wiegmann, Herp. Mex., 1834, p. 51; Bocourt, Miss. Sci. Mex., 187–, p. 200, pl. xviii, bis, 1, 1*a*, 1*b*, xix, fig. 2; *Tropidolepis variabilis* Dum. et Bibr., Erp. Gén., iv, 1837, p. 308.

Guatemala, both slopes, *Mission Scientifique;* La Union, San Salvador, *Comision Scientifique;* Guatemala, *Hague;* Tehuantepec, *Sumichrast;* Puebla, *Comision Geográfica;* Orizaba, *Sumichrast;* Mirador, Vera Cruz, *Sartorius;* Xalapa, *Montes de Oca;* Monterey, *Cope.*

SCELOPORUS PYRRHOCEPHALUS Cope, Proc. Acad. Phila., 1864, p. 177.

Colima, *Xantus;* Guadalaxara, *Major.*

SCELOPORUS MALACHITICUS Cope, Proc. Acad. Phila., 1864, p. 178; *Sceloporus smaragdinus* Bocourt, Miss. Sci. Mex., 1875, p. 186, pl. xviii, figs. 6, 6*a*, 6*b*, xix, figs. 11*a*, 11*b*.

Costa Rica, *Riotte, Gabb;* Guatemala, *Hague, Salvin, Van Patten;* Yucatan, *Schott.*

SCELOPORUS GRACIOSUS Bd. Gird., Proc. Acad. Phila., 1852, p. 69; Stansbury's Report Great Salt Lake, 1852, 346, pl. v, fig. 1; Bocourt, Miss. Sci. Mex.; *Sceloporus gracilis* Bd. Gird., Proc. Acad. Phila., 1852, 175; Girard, Herpetol. U. S. Ex. Exped., 1858, pl. xx, figs. 1–9.

Salt Lake City, Utah, Pitt River, California, *Newberry;* Owen's valley, Cal., *Horn;* Southern Oregon, *Cope;* VAR. Jalapa, Matamoros, *Comision Geográfica.*

SCELOPORUS GRAMMICUS Wiegmann, Herp. Mex., pt. i, 1834, p. 51; etiam Isis von Oken, p. 369, exclus. var. *microlepidota;* Bocourt, Miss. Sci. Mex., 187–, p. 192, pl. xviii, bis 12, 12*a*, 12*b;* *Sceloporus heterurus* Cope, Proc. Acad. Phila., 1866, p. 332.

Tehuantepec, *Sumichrast;* Mirador, Vera Cruz, *Sartorius;* Chihuahua, *Wilkinson;* Matamoros Puebla, *Comision Geográfica.*

SCELOPORUS MICROLEPIDOTUS Wiegmann, Herp. Mex., 1834, p. 51; Bocourt, Miss. Sci. Mex., p. 194, pl. xviii, bis figs. 13, 13*a*, 13*b*, 13*c*, 13*d;* *Tropidolepis microlepidotus* Dum. Bibr., Erp. Gén., iv, 1837, p. 307.

Colima, *Ghiesbrecht;* Puebla, *Dugés, Ferrari-Perez;* Oaxaca, *Boucard;* Toluca, *Fillada;* Zacualtipan, *Bernal, Cope;* Mirador, Vera Cruz, *Sartorius;* Orizaba, *Sumichrast;* Guanajuato, *Dugés;* Jalapa, *Flohr.*

SCELOPORUS VIVIPARUS Cope, Proc. Amer. Philos. Soc., 1885, p. 398.

Orizaba, *Sumichrast;* Mirador, Vera Cruz, *Sartorius;* Tehuantepec, *Sumichrast.*

SCELOPORUS UNDULATUS Latr. Wiegmann, Isis, 1828, 369, Bd. Gird., U. S. Pac. R. R. Surveys, Whipple's Report, p. 37; Bocourt, Miss. Sci. Mex., 195, pl. xviii, bis figs. 11, 11*a*, 11*b;* *Stellio undulatus* Latreille, Hist. Nat. Rept., ii, 1802, p. 40; *Agama undulata* Dandin, Hist. Nat. Rept., iii, 1805, p. 384; *Uromastix undulatus* Green Merrem., *Tropidolepis undulatus* Cuv., Regne Animal, Ed. ii, il, 1829, p. 38; Gray, Catal. Brit. Mus., 1845, 208; Dum. et Bibr., Erp. Gén., iv, 1837, p. 298; Holbrook, N. Amer. Herpetol., iii, 1838, p. 58, pl. viii; *Sceloporus occidentalis* Bd. Gird., Proc. Acad. Phila., 1852, p. 175; *S. frontalis* Bd. Gird., loc. cit.; *Sceloporus longipes* Baird, l. c., 1858, p. 254; *S. dispar* Bd. Gird., l. c., 1852–'53, p. 127; *S. floridanus* Baird, l. c., 1858, p. 254.

North America, from ocean to ocean. City of Chihuahua, *Wilkinson.*

CELOPORUS SPINOSUS Wiegmann, Isis, 1828, p. 369; Herp. Mex., pars. i, 1834, p. 50, tab. vii, fig. 3; Fitzinger, Syst. Rept., 1843, p. 75; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 174, pl. xviii, figs. 2, 2*a*, 2*b*; *Tropidurus spinosus* Wagler, Syst. Amph., 1830, p. 146; *Tropidolepis spinosus* Gray, Synops. Rept. in Griffith's Anim. Kingd., t. ix, 1831, p. 43; Duméril et Bibron, Erp. Gén., t. iv, 1837, p. 304; Gray, Catal. Liz. Brit. Mus., 1845, p. 209; Aug. Duméril, Catal. Meth. Col. Rept., 1851, p. 77.

Guanajuato, *Dugés;* Puebla, *Comision Geográfica;* Tehuacan, *Comision Geográfica.*

The *S. spinosus* approaches the *S. undulatus* very closely, differing principally in size and in color, and the smaller number of femoral pores. A Texan form appears to connect the two.

CELOPORUS ZOSTEROMUS Cope, Proc. Acad. Phila., 1863, p. 105; *S. clarki* subsp. *zosteromus* Cope, Check-list, 1875, p. 49.

Lower California, *Xantus, Belding;* Southern Arizona.

CELOPORUS MELANORHINUS Bocourt, Ann. des Sciences Naturelles, iii, 1876, p. 85.

Tehuantepec, *Sumichrast;* Colima, *Xantus.*

CELOPORUS TÆNIOCNEMIS Cope, Proc. Amer. Philos. Soc., 1885, p. 399.

Guatemala, *Hague.*

CELOPORUS LUNÆI Bocourt, Miss. Sci. au Mex., iii, Rept., p. 184, pl. xviii, bis figs. 5, 5*a*, 5*b*.

Guatemala, *Bocourt.*

CELOPORUS FERRARIPEREZI Cope, Proc. Amer. Philos. Soc., 1885, p. 400.

? Guanajuato, *Dugés.*

CELOPORUS MELANOGASTER Cope, Proc. Amer. Philos. Soc., 1885, p. 400.

Guanajuato, *Dugés.*

CELOPORUS SERRIFER Cope, Proc. Acad. Phila., 1866, p. 124; Proc. Amer. Philos. Soc., 1885, pp. 395–401.

Yucatan, *Schott.*

CELOPORUS ACANTHINUS Bocourt, Mission Scientifique Mexique, iii, Reptiles, 180, pl. xviii, figs. 10, 10*a*, 10*b;* xix, figs. 4, 4*a*.

St. Augustino, West Guatemala, *Mission Scientifique.*

CELOPORUS TORQUATUS Greene and Peale; Wiegmann, Isis, 1828, p. 369; Herp. Mex., pars. i, 1834, p. 49, tab. vii, fig. 1; Fitzinger, Syst. Rept., 1843, p. 75; Gray, Catal. spec. Liz., 1845, p. 208; Aug. Duméril, Catal. méth. coll. Rept., 1851, p. 77; *Sceloporus formosus* Wieg., Herp. Mex., pl. i, 1834, p. 50, tab. vii, fig. 2; Fitzinger, Syst. Rept., 1843, p. 75; Bocourt, Miss. Sci. au Mexique, iii, Rept., p. 182, pl. xviii, figs. 3, 3*a*, 3*b*, 3*c;* Gray, Catal. Liz., 1854, p. 209; Aug. Duméril, Catal. méth. coll. Rept., 1851, p. 77; *Agama torquata* Greene and Peale, Journ. Acad. Phila., t. vi, 1827–1828, p. 231; *Tropidurus torquatus* Wiegm., Wagler, Syst. Amph., 1830, p. 146; *Tropidolepis torquatus* Gray, Synops. in Griffith's Anim. King., t. ix, 1831, p. 43; Dum. et Bibr., Erp. Gén., t. iv, 1837, p. 301; *Tropidolepis formosus* Dum. et Bibr., Erp. Génér., t. iv, 1837, p. 303; *Sceloporus poinsettii* Baird and Girard, Proc. Acad. Phila., 1852, p. 126; U. S. & Mex. Bound. Surv., 1859, p. 5, pl. xxix, figs. 1–3; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 171, pl. xviii, figs. 9, 9*a*, 9*b*, 9*c*.

Colima, *Dugés;* Oaxaca, *Boucard;* Xalapa, *Keating, Montesdeoca;* Vera Cruz, *Sartorius;* Monterey and Laredo, *Cope;* Texas, *Clark.*

Subspecies TORQUATUS P. & G.; Cope, Proc. Amer. Philos. Soc., 1885, p. 402.

Jalapa, *Keating.*

Subspecies POINSETTII B. & G.; Cope, l. c., p. 402.

S. W. Texas, *Clark, Cope;* Mexico, Chihuahua, *Wilkinson.*

Subspecies CYANOGENYS Cope, l. c., p. 402.

Monterey, Nuevo Leon, *Cope.*

Subspecies MUCRONATUS Cope, l. c., p. 402.

Vera Cruz, *Sartorius*.

Subspecies FORMOSUS Wiegm.; Cope, l. c., p. 402.

Jalapa, *Montesdeoca, Comision Geográfica*.

Subspecies MINOR Cope, l. c., p. 402.

Guanajuato, *Dugés*.

SCELOPORUS JARROVII Cope, Report U. S. Geol. Expl. Surv. W. of 100th Mer., p. 569, pl. xxiii, figs. 2, 2*b*, 2*c*, 2*d*.

Southern Arizona; Ciudad, *Forrer*.

SCELOPORUS ORNATUS Baird, Proc. Acad. Phila., 1858, p. 254; Rept. U. S. & Mex. Bound. Surv., Zool. Reptiles, p. 5.

Patos Coahuila, *Couch*.

SCELOPORUS DUGESI Bocourt, Miss. Sci. Mexique, iii, p. 188, pl. xviii, figs. 7, 7*a*, 7*b*; *Tropidolepis intermedius* Dugés, La Naturaleza, Mexico, vol. iv, p. 29, pl. i, figs. 21-32.

Guanajuato, *Dugés*.

Callisaurus Blainv.

Nouv. Ann. Mus. Hist. Nat., iv, 1835, p. 233; *Homalosaurus* Hallow.; Sitgreaves Exped., 1853, p. 116.

CALLISAURUS DRACONTOIDES Blainv., loc. cit., pl. xxiv, 2 sta.; *Homalosaurus ventralis* Hallow., loc. cit., pl. vi.

Lower California, *Xantus, Botta, Fisher*.

Holbrookia Girard.

Proc. Amer. Ass. Adv. Sci., 1850-'51, p. 201; *Cophosaurus* Trosch.; Wiegm. Archiv, 1850-'52, p. 389.

HOLBROOKIA ELEGANS Bocourt, Miss. Sci. au Mex., 1874, iii, Rept., p. 164, pl. xvii, bis, figs. 8, 8*a*; *H. Bischoffi* Cope, Proc. Acad. Phila., 1868, p. 310 (no description).

Mazatlan, *Peters, Bischoff;* S. of Chihuahua, *Potts*.

HOLBROOKIA MACULATA Gird., Proc. Amer. Ass. Adv. Sci., 1850-'51, p. 201.

Subspecies APPROXIMANS Baird; Cope, Proc. Amer. Philos. Soc., 1879, p. 265; *Holbrookia approximans* Baird, Proc. Phila. Acad., 1858, Dec. U. S. & Mex. Bound. Surv. Rept., p. 8.

Guanajuato, *Dugés;* Chihuahua, *Wilkinson*.

HOLBROOKIA TEXANA Troschel; Bd. & Gird., Proc. Acad. Phila., vi, 1852, p. 125; *Cophosaurus texanus* Troschel, Wiegmann's Archiv, 1850-'52, p. 389.

Monterey, Tamaulipas, *E. D. Cope;* S. of Chihuahua, *Potts;* Chihuahua, *Wilkinson*.

HOLBROOKIA PROPINQUA Baird; Gird., Proc. Acad. Phila., 1852, p. 126; Cope, Bull. U. S. Nat. Mus., No. 17, 1880, p. 15; Boulenger, Catal. Liz. Brit. Mus., ii, 1885, p. 208.

Presidio, W. Mexico, *Forrer*.

Phrynosoma Wiegmann.

Isis von Oken, 1828, p. 367; Wagler, Nat. Syst. Amphib., 1830, p. 323.

PHRYNOSOMA MODESTUM Girard, Stansbury's Salt Lake, 1852, 361, pl. vi; U. S. Mexican Boundary Survey, Reptiles, p. 10.

City of Chihuahua, *Wilkinson*.

PHRYNOSOMA ORBICULARE Hernandez; *Tapaya axin, Lacertus orbicularis*, Hernandez, Nov. Plant. Anim. Miss. Mex., 1651, c. xvi, p. 327, fig. sine numero; *Id.*, Linnæus, Syst. Nat., 1789, p. 1062; *Phrynosoma orbiculare*, Wagler, Descr. et Icon., Amph., 1833, pl. 23, fig. 1-2; *Id.*, Schinz. Naturg. and Abild. der Rept., 1833, p. *Id.*, Gravenhorst, Act. Acad. Cæs. Leop. Carol. Nat. C... 912, pl. 63; Wiegmann, Herp. Mex., 1834, p.

837, p. 321; Gray, Catal. Liz. Brit. Mus., 1845, p. 228; Aug. Duméril, Cat. Méth. Coll. Rept., Paris, 185, p. 78; Ch. Girard, Stansbury's Explor. Vall. Gr. Salt Lake f Utah, 1852, p. 359; *Tapaya orbicularis*, Cuv., Reg. Anim., t. ii, 1817, p. 35; *Id.* ec. edit., t. ii, 1819, p. 37; Ch. Girard, U. S. Exped. under command of Wilkes, 858, p. 394; *Id.*, Aug. Duméril et Bocourt, Miss. Sci. au Mex., iii 1870, p. 221, pl. il, figs. 1–1*a*, 1*b*, 1*c*, 1*d*, 1*e*, 1*f*.

ebla, *Comision Geográfica;* Puebla, *Sallé;* Vera Cruz, *Arago, Mehedin, Dugés;* City of Mexico, *Cope;* Guanajuato, *Dugés;* S. of Chihuahua, *Potts.*

YNOSOMA BOUCARDI Bocourt, Miss. Sci. au Mex., iii, 1870, p. 225, pl. xl, figs. 4–4*a*, 4*b*, 4*c*, 4*d*, 4*e*, 4*f*.

iteau of Mexico, *Boucard.*

YNOSOMA BRACONNIERI Bocourt, Miss. Sci. au Mex., 1870, pl. xii, figs. 7–7*a*.

axaca, *Jacob.*

YNOSOMA TAURUS Dugés, La Naturaleza Mexico, 1868; Dum. et Bocourt, Miss. Sci. au Mexique, 1870, pl. xii, fig. 8.

scatlan, Puebla, *Dugés.*

YNOSOMA CORNUTUM Harlan, Gray, Synops. Rept. in Griffith's Anim. Kingd., t. x, 1831, p. 45; Holbrook, N. Amer. Herpet., t. ii, 1842, p. 87, pl. xi; *Id.*, Gray, Catal. Liz. Coll. Brit. Mus., 1845, p. 229; Aug. Duméril, Cat. Méth. Coll. Rept., Mus. Paris, 1851, p. 28; Girard, Stansbury's Explor. Vall. Great Salt Lake, 1852, p. 360, pl. viii, figs. 1–6; *Id.*, E. Blanchard, (syst. osseux), Organ. Reg. Anim., 1852, 5th livr., pl. xii; *Id.*, Hallowell, Sitgreaves, Rept. Exped. Zuni and Color. Rivers, 1853, p. 119; *Id.*, Girard, U. S. Explor. Exped. under the command of Wilkes, 1858, pl. xxi, figs. 6–9, p. 403; *Id.*, U. S. & Mex. Bound. Survey, 1859, p. 9; *Id.*, Bocourt, Miss. Sci. au Mex. Rept, iii, p. 236, pl. xii, figs. 9–9*a*, 9*b*, 9*c*, 9*d*, 9*e*, 9*f*; *Agama cornuta* Harlan, Journ. Acad. Phila., iv, 1825, p. 299; *Tapaya cornuta Cuvier*, Règne Animal, 2d ed., t. ii, 1829, p. 37; *Phrynosoma harlanii* Wiegmann, Herp. Mex., t. i, 1834, p. 54; *Id.*, Dum. et Bibr., Erp. Génér., t. iv, 1837, p. 314; *Id.*, Spring et Lacordaire, Anat., 1842, 2d pt., p. 192, fig. 5 (Bull. Acad. Roy. Bruxelles); *Tropidogaster cornutus* Fitzinger, Synops. Rept., t. i, 1843, p. 79.

onterey, Nuevo Leon, *E. D. Cope;* City of Chihuahua, *Wilkinson.*

YNOSOMA ASIO Cope, Proc. Acad. Phila., 1864, p. 178; *Id.* Sumichrast, Bibl. Univers. et Rev. Suisse (Arch. Sc. Phys. et Nat., 1873, p. 258); *Batrachosoma asio* Bocourt, Miss. Sci. au Mex., iii, Rept., p. 241, pl. xvii, figs. 9–9*a*, 9*b*, 9*c*; *Phrynosoma spinimentum* Peters, Monatsber. Berlin Akad. Wiss., 1873, p. 742.

lima, *Xantus;* Chiapas, *Montes de Oca;* Tehuantepec, *Sumichrast.*

YNOSOMA CORONATUM De Blainville, Nouv. Ann. Hist. Nat., iv, 1835, 284, pl. xxv, figs. 1*a*, 6*c*, Dum. Bibr., Erp. Gén., iv, 1837, 318; Aug. Dum., Catal. Méth. Coll. Rept., M. P., 1851, 78; Cope, Proc. Acad. Phila., 1866, p. 302; Dum. et Bocourt, Miss. Sci. Mexique, 1870, pl. x, fig. 10; *Batrachosoma coronatum* Fitz., Girard, Bocourt, l. c., p. 239.

ower California, *Botta, Xantus, Fisher.*

XENOSAURIDÆ.

e, Proc. Phila. Acad., 1866, p. 322.

Xenosaurus Peters.

atab. Akad. Wiss. Berlin, 1861, 453.

OSAURUS GRANDIS Gray; Cope, Proc. Acad. Phila., 1866, p. 322; *Cubina grandis* Gray, Ann. and Mag. Nat. Hist., 2d series, t. xviii, 1856, p. 270; *Xenosaurus fasciatus* Peters, Monatsbericht Akad. Berlin, 1861, p. 453.

Sumichrast; Huanasco, *Peters;* Tehuantepec, *Sumichrast;* Oaxaca, *Sallé.*

HELODERMIDÆ.

Gray; Cope, Proc. Acad. Nat. Sci. Phila., 1864, 228; 1866, 322.

Heloderma Wiegmann.

HELODERMA HORRIDUM Wiegmann, Isis, 1829, p. 627; *Herpetologia Mexicana* 1834, pl. i, Gray, Catal. Liz. Brit. Mus., 1845.

Tehuantepec, *Sumichrast;* Presidio, West Mexico, *Forrer.*

ANGUIDÆ.

Boulenger, Ann. Mag. Nat. Hist., 1884, 121, Do. + *Gerrhonotidæ*, Cope, Proc. Acad. Nat. Sci. Phila., 1864, 228.

Gerrhonotus Wiegmann.

Herp. Mex., 1834, p. 31, Isis, 1828, p. 370; *Pterogasterus* Peale and Green, Journ. Acad. Phila., 1830, p. 233.

GERRHONOTUS LIOCEPHALUS Wiegmann, Beitr. zur Amphib., Isis, 1828, p. 379; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 342, pl. xxi A, figs. 1–2–2*a*; *Gerrhonotus tesselatus* Wiegmann, Herp. Mex., 1834, pars. i, p. 32, pl. x, fig. 3; *Id.*, Dum. et Bibr., Erp. Gén., Hist. Rept., t. v, 1839, p. 405; *Id.*, Gray, Catal. spec. Liz. Brit. Mus., 1845, p. 53; *Id.*, Aug. Duméril, Catal. Rept. Mus. Paris, 1851, p. 143; ? *Gerrhonotus infernalis* Baird, Proc. Acad. Phila., 1858, p. 255; *Id.*, Emory's U. S. & Mex. Bound. Surv., 1859, p. 11; Cope, Proc. Acad. Phila., 1866, p. 322; *Gerrhonotus lemniscatus* Bocourt, Arch. Mus. Bull., t. vii, 1872, p. 105; *Id.*, O'Shaughnessy, Ann. and Mag. Nat. Hist., 1873, p. 45.

Vera Cruz, *Sartorius;* Puebla, *Comision Geográfica;* Oaxaca, Guanajuato, *Dugés.*

GERRHONOTUS OPHIURUS Cope, Proc. Acad. Phila., 1866, 322.

Orizaba, Vera Cruz, *Sumichrast.*

GERRHONOTUS VENTRALIS Peale et Green, Cope, Proc. Acad. Phila., 1866, p. 32[illegible] *Pterogasterus ventralis* Peale et Green, Journ. Acad. Phila., 1830, vi, p. 233.*

Probably valley of Mexico, *E. D. Cope.*

GERRHONOTUS MODESTUS Cope; *Pterogasterus modestus* Cope, Proc. Acad. Phila., 18[illegible] p. 97.

? Guatemala.

GERRHONOTUS DEPPEI Wiegmann, Herp. Mex., 1834, p. 32, pl. ix, fig. 3; O'Shaughnessy, Ann. and Mag. Nat. Hist., 1873, p. 45; Cope, Proc. Amer. Philos. Soc., 187[illegible] p. 96; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 325, pl. xxi A, figs. 3–3*a*; *Abronia deppei* Gray, Ann. and Mag. Nat. Hist., ii, p. 389; Catal. spec. Liz., 1845, p. 53.

Mexico, *Deppe.*

GERRHONOTUS TAENIATUS Wiegmann, Isis, 1828, p. 379; *Id.*, Herp. Mex., 1834, p. 32, pl. ix, fig. 1; *Id.* Dum. et Bibr., Erp. Gén., t. v, 1839, p. 399; O'Shaughnessy, Ann. and Mag. Nat. Hist., 1873, p. 45; *Id.*, Cope, Proc. Amer. Philos. Soc., 1877, p. 96 (10[illegible] C. H. T. A.); Bocourt, Miss. Sci. au Mex., iii, Rept., p. 327, pl. xxi A, figs. 4–4*a*; *Abronia taeniata* Gray, Catal. spec. Liz. Brit. Mus., 1845, p. 53.

Orizaba, *Sumichrast.*

*Additional specimens of this species confirm the validity of the character I assigned to this species as above, as distinct from the *G. liocephalus*. These are the longer body and shorter limbs, the presence of a large single preocular plate instead of two, and the uniform coloration. I add that the internasal parietal plate is longer and narrower, and in one specimen now before me the anterior two internasals are both in front of the nasal plate instead of one being above it. In this specimen there is no anterior interfrontonasal.

GERRHONOTUS RHOMBIFER Peters, Monatsber, Akad. Wiss. Berlin, 1876, p. 298; Cope, Proc. Amer. Philos. Soc., 1877, p. 96; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 332, pl. xxi B, figs. 4–4*a*.

Chiriqui, Veragua, *Peters*.

GERRHONOTUS VASCONCELOSII Bocourt, Nouv. Arch. Mus., 1872, p. 107; *Id.*, O'Shaughnessy, Ann. and Mag. Nat. Hist., 1873, p. 45; *Id.*, Cope, Proc. Amer. Philos. Soc. (10th C. H. T. A.); Bocourt, Miss. Sci. au Mexique, iii, Rept., p. 334, pl. xxi, fig 3, et pl. xxi A, fig. 8–8*a*.

Arguetta, Western Guatemala, *Vasconcelos*.

GERRHONOTUS GRAMINEUS Cope, Proc. Acad. Phila., 1864, p. 179; *Id.*, O'Shaughnessy, Ann. and Mag. Nat. Hist., 1873, p. 45; *Id.*, Cope, Proc. Amer. Philos. Soc., 1877, p. 96 (10th C. H. T. A.); Günther, Biolog. Centrali-Amer. Rept., p. 36, pl. xxiv, fig. B.

Orizaba, 3,000 meters altitude, and Oaxaca, *Sumichrast*.

GERRHONOTUS OAXACÆ Günther, Biologia Centr. Amer., p. 36, pl. xxiv, f. A; Boulenger, Catal. Liz. Brit. Mus., ii, 1885, p. 268; *G. gramineus* "Cope", Bocourt, Miss. Sci. Mex., Rept., 330, pl. xxvi A, fig. 6.

Oaxaca, *Günther*.

GERRHONOTUS AURITUS Cope, Proc. Acad. Phila., 1868, p. 306; *Id.*, O'Shaughnessy, Ann. and Mag. Nat. Hist., 1873, p. 45; *Id.*, Cope, Proc. Amer. Phil. Soc. (10th C. H. T. A.).

Vera Paz (Guatemala), *Hague*.

GERRHONOTUS KINGII Bell, Ann. Nat. Hist., 1838, vol. i, p. 390; O'Shaughnessy, Ann. and Mag. Nat. Hist., 1873, p. 45; Cope, Proc. Amer. Philos. Soc., 1877, t. xvii, p. 96; Bocourt, Miss. Sci. au Mex., p. 339, pl. xxi C, fig. 2–2*a*; *Gerrhonotus multifasciatus*, Dum. et. Bibr., Erp. Gén., Hist. Nat. Rept., 1839, t. v, p. 401; A. Duméril, Cat. Méth. Coll. Rept. Mus. Paris, 1851, p. 143; *Elgaria kingii*, Gray, Catal. Spec. Liz. Brit. Mus., 1845. p. 53; *Gerrhonotus nobilis* Baird and Girard, Proc. Acad. Phila., 1852, p. 129; *Id.*, U. S. & Mex. Bound. Survey, 1859, p. 11, pl. xxv. figs. 1–8 (teste Bocourt.)

Mexico, *Bell*.

GERRHONOTUS CŒRULEUS Wiegmann, Isis, 1828, p. 330; Herp. Mex., p. 31; Bocourt, Miss. Sci. Mex., 353; Boulenger, Cat. Liz. Brit. Mus., 273.

Mexico, *Deppe*.

GERRHONOTUS MULTICARINATUS De Blv., Nouv. Ann. Mus. Hist. Nat., 1835, 289, pl. xxv, fig. 2; Dum. Bibr., Erp. Gén., 1839, v, p. 404; Bocourt, Miss. Sci. au Mexique, 357, pl. xxi C, fig. 5–5*a*; *G. Burnettii* Gray, Griffith's Anim. King., ix, Syn., p. 64; Beecher's Voyage Rept., p. 96, pl. xxi, f. 2; *G. Wiegmanni* Gray, Catal. Liz. Brit. Mus., 1845, 54; *Tropidolepis scincicauda*, Amer. Journ. Sci. Arts, vii, 1849, 202; *Elgaria scincicauda* Baird and Girard, Stansbury's Salt Lake, 1852, 348, pl. iv. figs. 1–3; Girard, Wilkes Explor. Exped., 1858, pl. xxiii, figs. 1–9; *Elgaria grandis* Baird and Girard, Proc. Acad. Phila., 1852, p. 176; Girard, Wilkes Explor. Exped., 1852, xxii, figs. 1–9; *E. marginata* Hallow., Proc. Acad. Phila., 1852, 179; *Gerrhonotus webbii* Baird, Proc. Acad. Phila., 1858, p. 255; U. S. Mex. Bound. Surv., ii, 1859, p. 11, pl. xxiv, figs. 1–10.

Lower California, *Botta, Xantus;* S. of Chihuahua, *Potts*.

GERRHONOTUS OBSCURUS Günther, Biologia Centr. Amer. Rept., p. 40, pl. xxv, fig. E. Mexico, *Günther*.

GERRHONOTUS MONTICOLUS Cope, Proc. Amer. Philos. Soc., 1877, p. 97; *G. fulvus* "Bocourt", Cope, Journ. Acad. Phila., 1875, p. 118, nec Bocourtii.

Pico Blanco, Costa Rica, *Gabb*.

Barissia Gray.

Catal. Liz. Brit. Mus., 1845, p. 46; Cope, Proc. Amer. Philos. Soc., 1879, 97.

*** With two pairs of internasal scuta.**

BARISSIA IMBRICATA Wiegmann; Gray, Catal. Brit. Mus., 1845, p. 55; *Id.*, Cope, Proc. Amer. Philos. Soc., t. xvii, 1857, p. 97; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 363, pl. xxi B, figs. 1–1*a*, 2–2*a*; *Gerrhonotus imbricatus* Wiegmann, Isis, 1828, t. xxi, p. 379; Wiegmann, Herpet. Mex., 1834, p. 34, pl. x, figs. 2 et 5; *Id.*, Dum. et Bibr., Erp. Gén., t. v, 1839, p. 407; *Gerrhonotus lichenigerus* Wagler, Descrip. et Icon. Amphib., 1834, pl. xxxiv, fig. 2; *Id.*, Wiegmann, Herp. Mex., 1834, pars 1, p. 35, pl. x, fig. 6.

Cuernavaca, *Méhédin*; Guanajuato, *Dugés*, *Ghiesbrecht*; S. of Chihuahua, *Potts*; Zacualtipan Hidalgo, *Bernad*; Puebla, *Comision Geográfica*.

BARISSIA RUDICOLLIS Wiegmann, Isis, 1828; Gray, Cat. Liz. Brit. Mus., 1845, p. 55; *Id.*, Cope, Proc. Amer. Philos. Soc., t. xvii, p. 96; *Gerrhonotus rudicollis* Wiegmann, loc. cit., t. xxi, p. 379; *Id.*, Wagler, Natür. Amphib., 1830, p. 158; *Id.*, Wiegmann, Herpet. Mex., pars i, 1834, p. 31, pl. x, fig. 1; *Id.*, Dum. et Bibr., Erp. Gén., t. v, 1839, p. 410; *Gerrhonotus* (*Barissia*) *rudicollis*, Bocourt, Miss. Sci. au Mex., iii, Rept., p. 367, pl. xxi B, figs. 3–3*a*.

Mexico, *Deppe*.

BARISSIA PLANIFRONS Bocourt, Miss. Sci. au Mex., iii, Rept., p. 361, pl. xxi, C, figs. 1–1*a*.

Oaxaca, *Boucard*.

**** With three pairs of internasal scuta.**

BARISSIA ANTAUGES Cope, Proc. Acad. Phila., 1866, p. 132; *Gerrhonotus viridiflavus* Bocourt, Ann. Sci. Nat., 1873; *G. bocourti* Peters, Monatsber. Akad. Wiss. Berl., 1876, p. 297 (Bocourt).

Orizaba, Vera Cruz, *Sumichrast*.

BARISSIA FIMBRIATA Cope, Proc. Amer. Philos. Soc., 1884, p. 171: *Gerrhonotus auritus* Bocourt, Mission Scientifique au Mexique, Reptiles, p. 337, pl. xxi, figs. 2, xxi A, 7–7*a*, nec Copei.

Vera Paz, *Bocourt*, *Peters*.

Mesaspis Cope.

Proc. Acad. Phila., 1877, p. 96.

MESASPIS MORELETI Bocourt, Cope, Proc. Am. Philos. Soc., 1877, xvii, p. 96; *Gerrhonotus morcletii* Bocourt, Nouv. Arch. du Mus. Bull., 1872, p. 102; Miss. Sci. au Mex., iii, Rept., p. 349, pl. xxi, fig. 1, pl. xxi B, figs. 5–5*a*; *Gerrhonotus Wiegmannii* Salvin, Proc. Zool. Soc., 1860, p. 455.

Vera Paz, Guatemala; Peten, *Morelet*.

MESASPIS FULVUS Bocourt, *Gerrhonotus fulvus* Boc., Miss. Sci. au Mexique, iii, Rept., p. 352; pl. xxi B, figs, 6–6*a*; Nouv. Arch. Mus. Bull., 1872, p. 104; *Id.*, O'Shaughnessy, Ann. and Mag. Nat. Hist., 1873, p. 45; *Mesaspis fulvus* Cope, Proc. Amer. Philos. Soc., 1877, t. xvii, p. 96.

Totonicapam, Guatemala, west of the Cordillera, at an elevation of 2,460 meters, *Mission Scientifique*.

Diploglossus Wiegmann.

Herp. Mex., 1834, p. 36; *Camilia*, Gray, Cat. Liz. Brit. Mus., 1845, p. 118.

DIPLOGLOSSUS MILLEPUNCTATUS O'Shaughnessy, Ann. and Mag. Nat. Hist., 1874, t. xiii, p. 301; *Id.*, Am. Nat., 1884, May, p. 514; *Id.*, Bocourt, Miss. Sci. au Mex., iii, Rept., p. 388, pl. xxii A, figs. 5–5*a*, 5*b*.

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DIPLOGLOSSUS MONOTROPIS Kuhl, Wiegmann, Herp. Mex., 1834, p. 36; Wiegmann, Arch., 1837, p. 130; Cope, Jour. Acad. Phila., 1875, p. 118; Bocourt, Miss. Sci. au Mexique, iii, Rept., p. 391, pl. xxii, figs. 6–6*a*, 6*b*, 6*c*; *Scincus monotropis* Kuhl, Beitr., 1820, p. 18; *Tiliqua jamaicensis* Gray, Ann. and Mag. Nat. Sci. Hist., t. ii, p. 23; *Camilia jamaicensis* Gray, Cat. Liz. Brit. Mus., 1845, p. 119.

Costa Rica, summit of Pico Blanco, *Gabb.*

Celestus Gray.

Cat. Liz. Brit. Mus., 1845, p. 117; *Siderolamprus* Cope, Proc. Acad. Phila., 1860, p. 368.

CELESTUS STEINDACHNERII Cope, Proc. Acad. Phila., 1864, p. 179; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 383, pl. xxii, figs. 3–3*a*, 3*b*; Günther, Biol. Centr. Amer. Rept., p. 34, pl. xxii, fig. A.

Orizaba, *Sumichrast;* West Guatemala, *Bocourt;* Vera Paz (Brit. Mus.), *Bocourt* (thirty-two rows of scales); Jalapa, *Comision Geográfica.*

CELESTUS CHALYBÆUS Cope, Proc. Amer. Philos. Soc., 1879, p. 270; Proc. Acad. Phila., 1868, p. 124; Proc. Amer. Philos. Soc., 1884, p. 170; *Diploglossus chalybæus* Cope, loc. cit., 1866, p. 321 (thirty-four rows of scales).

Tehuantepec, mountains of Orizaba, Vera Cruz, at an elevation of 4,000 to 6,000 feet, *Sumichrast;* Jalapa, *Kohr.*

CELESTUS ENNEAGRAMMUS Cope; *Siderolamprus enneagrammus* Cope, Proc. Acad. Phila., 1860, p. 368 (thirty-eight rows of scales).

Jalapa, *De Oca, Flohr.*

CELESTUS BILOBATUS O'Shaughnessy, Bocourt, Miss. Sci. au Mex., p. 382, pl. xxii A, fig. 1.

Costa Rica, *O'Shaughnessy* ("forty rows of scales").

XANTUSIDÆ.

Cope, Proc. Acad. Phila., 1883, p. 29.

Lepidophyma Duméril.

Catal. Méth. Batr. Rept. Mus. Paris, 1851, p. 137; *Poroidogaster* Smith, Gray, Proc. Zool. Soc. London, 1863, p. 152.

LEPIDOPHYMA FLAVIMACULATUM A. Duméril, Cat. Méth. Coll. Rept. Mus. Paris, 1851, p. 137; *Id.*, Rev. et Mag. Zool., 1852, p. 409, pl. xvii; *Poroidogaster grayii* Andrew Smith, MSS. published by Gray in Proc. Zool. Soc. London, p. 152, pl. xxi; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 306. pl. xx F, figs. 2–2*a*, 2*b*, 2*c*, 2*d*, 2*e*, 2*f*, 2*g*.

Vera Paz, *Morelet.*

LEPIDOPHYMA SMITHII Bocourt, Miss. Sci. au Mex., 309, pls. xx F 3, xx G 2; Journal Zoologie, 1876, v, p. 403.

Tehuantepec, *Sumichrast;* W. Guatemala, *Miss. Sci.*

TEIIDÆ.

Ameiva Cuvier.

AMEIVA GABBIANA Cope, Batr. and Rept. of Costa Rica, 1875, p. 117.

East Costa Rica, *Gabb.*

AMEIVA PULCHRA Hallowell, Proc. Acad. Nat. Sci. Phila., 1860, p. 483; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 251.

Nicaragua, *Stimpson, MacNiel.*

AMEIVA UNDULATA Gray, Catal. Liz. Brit. Mus.; Cope, Proc. Acad. Phila., 1862, Feb.; *Cnemidophorus undulatus* Wiegmann, Herp. Mex., p. 27.

Guatemala, *Van Patten;* Coban, *Hague;* Peten, *Berendt;* Tehuantepec, *Sumichrast;* Colima, *Xantus;* Mirador Vera Cruz, *Sartorius;* Orizaba, Vera Cruz, *Sumichrast.*

AMIVA QUADRILINEATA Hallowell; *Cnemidophorus quadrilineatus* Hallowell, Proc. Acad. Phila., 1860, p. 483; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 251.
Nicaragua, *Stimpson.*

AMIVA FESTIVA Mus. Berol.; Bocourt, Miss. Sci. au Mex., iii, Rept., p. 260, pl. xx A, figs. 10, 10*a*, 10*b*, 10*c*, 10*d*, pl. xx D, fig. 3; Cope, Journ. Acad. Phila., 1875, p. 117; *Cnemidophorus festivus* Lichtenstein, Nom. Rept. Amph., 1856, p. 13 (diagnosis incorrect); *Amiva eutropia* Cope, Proc. Acad. Phila., 1862, p. 62; *Amciva Edwardsii* Bocourt, Ann. Sci. Nat., 1863, t. xxii, art. 16.
Central America; Veragua, *Mus. Ber.*; Rio de la Pasion Rio Polochic, *Bocourt;* Costa Rica, *Gabb;* Nicaragua *Bransford.*

AMIVA SURINAMENSIS Gray; Catal. Liz. Brit. Mus., p. 18; *Lacerta ameiva, L. lateristriga, L. tristriata,* Spix, Anim. Braz., tab. xxiii and xxiv, 182; *Teius ameiva* Merr. Nov. Zool. Braz. Rept., p. 170; *Ameiva vulgaris* Licht., Dum. et Bibr. Erp. Gén.
Surinam, Venezuela.

Subspecies PRÆSIGNIS Cope, Proc. Acad. Phila., 1862, p. 7; *Amiva præsignis* Bd. et Gd.
Panama, *Bransford.*

Cnemidophorus Wagler.

Natur. Syst. Amph., 1830, p. 154.

CNEMIDOPHORUS GUTTATUS Wiegmann, Herp. Mex., 1834, p. 29; Gray, Catal. Liz. Brit. Mus., 22; *Amiva guttata* Cope, Proc. Acad. Phila., 1862, Feb.; *Cnemidophorus mexicanus lepidopus* Cope, Proc. Amer. Philos. Soc., 1877, p. 93; *Cnemidophorus unicolor* Cope, Proc. Amer. Philos. Soc., 1877, p. 93.
Vera Cruz, *Burroughs;* Orizaba, *Sumichrast;* Jalapa, *Comision Geográfica;* West Tehuantepec, *Sumichrast.*

CNEMIDOPHORUS IMMUTABILIS Cope, Proc. Amer. Philos. Soc., 1877, p. 93.
West Tehuantepec, *Sumichrast.*

CNEMIDOPHORUS DEPPII Wiegmann, Herp. Mex., p. 28; Bocourt, Miss. Sci. Mex., Rept., 281, pl. xx, fig. 3; *C. lativittis* Cope, Proc. Amer. Philos. Soc., 1877, p. 94.
Honduras, *Leconte;* Tehuantepec, west side, *Sumichrast.*

CNEMIDOPHORUS LINEATISSIMUS Cope, Proc. Amer. Philos. Soc., 1877, p. 94; Güntl. Biol. Cent. Amer., Rept., p. 27.
Colima, *Xantus;* Guadalaxara, *Major.*

CNEMIDOPHORUS SEXLINEATUS Linn.

Subspecies SEXLINEATUS Linn.
City of Chihuahua, *Wilkinson;* Monterey, *Cope;* Puebla, *Mision Geográfica.*

Subspecies COMMUNIS Cope, Proc. Amer. Philos. Soc., 1877, p. 95.
Var. I, Colima *Xantus;* Coban, Guatemala, *Hague.* Var. II, Guadalaxara, *Major* Cordova, Vera Cruz, *Sumichrast;* Guatemala, *Hague.*

Subspecies GULARIS Bd. Gird. *C. guttatus* Hallow.
City of Chihuahua, *Wilkinson.*

Subspecies TIGRIS Bd. Gird.: *Cnemidophorus tigris* Bd. Gird., U. S. & Mex. Boundary Surv., Reptiles, p. 10, pl. xxxiii.
City of Chihuahua, *Wilkinson.*

CNEMIDOPHORUS MARIARUM Günther, Biol. Cent. Amer., Rept., p. 28, pl. xx.
Tres Marias Islands, *Forrer.*

CNEMIDOPHORUS ANGUSTICEPS Cope, Proc. Amer. Philos. Soc., 1877, p. 95.
Yucatan, *Schott.*

CNEMIDOPHORUS COSTATUS Cope, Proc. Amer. Philos. Soc., 1877, p. 95.
The locality uncertain.

CNEMIDOPHORUS MEXICANUS Peters.
Between City of Mexico and Chihuahua, *Potts.*

CNEMIDOPHORUS GRAHAMII Bd. Gird., Proc. Acad. Phila., 1852, vi, 128, U. S. & Mex. Bound. Surv., Rept., p. 10, pl. xxii, figs. 1–6.
Between City of Mexico and Chihuahua, *Potts.*

CNEMIDOPHORUS MAXIMUS Cope, Proc. Acad. Phila., 1863, p. 104.
Lower California, *Xantus.*

CNEMIDOPHORUS INORNATUS Baird, Proc. Acad. Phila., 1858, Dec., U. S. & Mex. Bound. Surv., ii, Rept., p. 10.
Nuevo Leon, *Couch.*

CNEMIDOPHORUS OCTOLINEATUS Bd., Proc. Amer. Phila., 1858, Dec., U. S. & Mex. Bound. Surv., ii, p. 10.
Nuevo Leon, *Couch.*

CNEMIDOPHORUS GRACILIS Bd. and Gd., Proc. Acad. Phila., vi, 1852, p. 128; U. S. & Mex. Bound. Surv., ii, p. 10, pl. xxxiv, figs, 9–14.
Castanuelas Coahuila, *Couch.*

Verticaria Cope.

Proc. Acad. Phila., 1863, p. 103.

VERTICARIA HYPERYTHRA Cope, Proc. Acad. Phila., 1863, p. 103.
Lower California, Cape St. Lucas, *Xantus, Fisher;* San Diego, Cal., *Lippincott.*

VERTICARIA HEDRACANTHA Bocourt, Cope, Jour. Acad. Phila., 1875, 165; *Amiva hedracantha* Bocourt, Miss. Sci. Mex., p. 263, pl. xxii A, fig. 6; Boulenger, Ann. Mag. Nat. Hist., 1884, p. 120–22.
"Mexico," *Dubois*, teste Bocourt.

Leposoma Spix.

Cope, Proc. Amer. Philos. Soc., 1866, p. 97; *Chalcidolepis* Cope, Journ. Acad. Phila., 1875, p. 116.

LEPOSOMA METALLICUM Cope; *Chalcidolepis metallicus* Cope, Batr. and Rept. Costa Rica, 1875, p. 116, pl. xxviii, fig. 2.
Aguacate Mountains, W. Costa Rica, *Gabb.*

LEPOSOMA MARMORATUM Gray; *Argalia marmorata* et *olivacea* Gray, Ann. Mag. Nat. Hist., 1846, 67, et Proc. Zool. Soc. London, 1847, p. 97; *Gerrhonotus pœcilochilus* Licht. Nomen. Rept. Mus. Berl., 16.
Veragua, *Günther* (Biol. Centr. Amer.).

SCINCIDÆ.

Cope, Proc. Acad. Phila., 1864, p. 228.

Mocoa Gray.

Catal. Brit. Mus., 1845, p. 80.

MOCOA ASSATA Cope, Batr. and Rept. Costa Rica, 1875, p. 115; *Lampropholis assatus* Cope, Proc. Acad. Phila, 1864, p. 179; *Lygosoma assatum* Bocourt, Miss. Sci. Mex., p. 450, pl. xxii F, fig. 7.
Talamanca, E. Costa Rica, *Gabb;* Guatemala, *Van Patten;* San Salvador, *Dow;* Tehuantepec, *Sumichrast.*

Oligosoma Girard.

Proc. Acad. Phila., and Wilkes' U. S. Exploring Expedition, Herpetology; *Lygosomella* et *Leptosoma* Girard, loc. cit.; *Mocoa* ** Gray, Catal. Liz. Brit. Mus., 1845, p. 82.

OLIGOSOMA GEMMINGERII Cope, Proc. Acad. Phila., 1864, p. 180; *Lygosoma gemmingeri* Bocourt, Miss. Sci. Mex., p. 449.
Orizaba, Vera Cruz, *Sumichrast;* Rio Verde, *Sumichrast;* Jalapa, *Comision Geografica* Zacualtipan, *Cope.*

Blepharactisis Hallow.

Proc. Acad. Phila., 1860, p. 484.

BLEPHARACTISIS SPECIOSA Hallow., loc. cit., p. 484.
Nicaragua, *Stimpson* (teste Hallowell).

ANELYTROPIDÆ.

Anelytropsis Cope.

Proc. Amer. Philos. Soc., 1885, p. 380.

ANELYTROPSIS PAPILLOSUS Cope, loc. cit., fig. 9.
Jalapa, *Comision Geográfica Exploradora.*

AMPHISBÆNIA.

CHIROTIDÆ.

Chirotes Duméril.

CHIROTES CANALICULATUS Lacép.
Cape Saint Lucas, Lower California, *Xantus.*

OPHIDIA.

The families of snakes are distinguished by the following osteological characters:[1]

A. Opisthotic intercalated in the cranial walls (*Angiostomata*).

* No ectopterygoid; palatines bounding choanæ posteriorly; ethmoturbinal forming part of roof of mouth; rudiments of pelvis (*Scolecophidia*).[2]

I. Maxillary bone fixed to prefrontal and premaxillary; a pubis.....CATODONTA.[3]

II. Maxillary bone vertical and free from all others; no pubis.....EPANODONTA.[4]

** An ectopterygoid; palatines not bounding choanæ posteriorly.

III. Maxillary bone free, horizontal .....TORTRICINA.

† A coronoid bone.

α. Rudimentary posterior extremities .....*Tortricidæ* Müller.

αα. No rudiments of posterior extremities .....*Uropeltidæ* Müller.

B. Opisthotic attached scale-like to cranial walls, and produced freely. Ectopterygoid present (*Eurystomata*).

IV. Maxillary bone horizontal, in contact with the premaxillary, and furnished with solid teeth. No rudiments of pelvis.....ASINEA.

α. Rudiments of posterior extremities (*Peropoda*).

β. Coronoid bone present.

Supraorbital and postorbital bones and premaxillary teeth present..*Pythonidæ* Cope.

No supraorbitals or premaxillary teeth; postorbitals present.....*Boidæ* Cope.

ββ. No coronoid bone.

No supraorbitals nor postorbitals nor premaxillary teeth.....*Charinidæ* Cope.

αα. No rudiments of posterior extremities (*Colubroidea*).

β. Coronoid bone present.

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[1] This arrangement was first published by the writer in the Proceedings of the Philadelphia Academy for 1864, p. 230. The definitions of the lower primary divisions were derived from J. Müller.

[2] The characters of this division as I originally gave them (Proceedings Academy Philadelphia, 1864, p. 230) were derived from J. Müller, which have been shown to be partially erroneous by Duméril and Bibron, and Peters.

[3] Includes only the family *Stenostomidæ*.

[4] One family, the *Typhlopidæ*.

No postorbital or supraorbital bones; premaxillary teeth present.. *Xenopeltidæ* Cope.

$\beta\delta$. No coronoid bone.

β. Postorbital bone produced over the supercilliary region.

No gastrosteges..... *Acrochordidæ* Cope.

Gastrosteges present..... *Nothopidæ* Cope.

$\beta\beta$. Postorbital bone not extending over the supercilliary region.

δ. Nostril in or between nasal plates..... *Colubridæ* Auct.

ε. Vertebral hypapophyses confined to the anterior part of the column, *Natricinæ*.

$\varepsilon\varepsilon$. Vertebral hypapophyses extending throughout the column, *Colubrinæ* Cope.

$\delta\delta$. Nostril in the rostral plate..... *Aconthophidæ* Gthr.

V. Os maxillare horizontal, thickened in front, and not reaching the premaxillare anteriorly, and bearing a perforate tooth. PROTEROGLYPHA.

α. Caudal hypapophyses bifid; caudal neural spines and pleurapophyses short.

Postfrontal bones wanting; fang grooved ..... *Elapidæ* Cope.

Postfrontals present; fang grooved..... *Najidæ* Cope.

Postfrontals present; fang not grooved..... *Dendraspididæ* Gthr.

$\alpha\alpha$. Caudal hypapophyses simple; caudal neural spines and pleurapophyses elongate.

A postfrontal bone..... *Hydrophidæ* Gthr.

VI. Maxillary bone vertical, not reaching premaxillary, articulating with the prefrontal by a ginglymus, and to the ectopterygoid without imbrication, and bearing a perforated tooth..... SOLENOGLYPHA.

Maxillary bone not excavated; fang not grooved in front; no postfrontal bone, *Atractaspididæ* Gthr.

Maxillary bone not excavated; fang grooved in front; a postfrontal.. *Causidæ* Cope.

Maxillary bone not excavated; fang not grooved; a postfrontal..... *Viperidæ* Grey.

Maxillary bone excavated by a large chamber; fang not grooved in front; a postfrontal..... *Crotalidæ* Gray.

In the following pages I present synoptical diagnoses of the genera of the Ophidia arranged in key form. These are placed under subfamily heads which are not, with the exception of the Homalopsinæ, defined. It is not certain, therefore, that their contents are in all cases properly limited or distributed. It remains a desideratum to discover the characters of the natural divisions of the Colubridæ, if any there be. The characters presented by Duméril and Bibron, and by Günther, are important but insufficient. For the definition of the genera distinct characters exist, although the subject is one of much difficulty. The object of definition being, as I imagine, precision and the consequent increased facility of determination, I have employed all structural characters whatever, and only neglected them where it is evident that they are inconstant within the limits of a species. I find of the greatest importance the grooved or non-grooved characters of the posterior teeth, and the absence or number of the scale-pits. The division or non-division of the anal scutum is also of much importance, although in a very few genera (*e. g.*, Xenodon) it is not constant. Believing, as the system always must, on exact characters, I have not allowed considerations of "physiognomy" to change a result where it conflicts with structure, which is, however, rarely the case. The tendency of some authors to neglect characters and to depend on "physiognomy" destroys precision and explains nothing, besides rendering identification of species most laborious, resting as it must in that case on merely empirical methods. I also do not use as generic characters the number of [illegible], or of labial scuta, or the size of the eye, believing that these are only available in the distinction of species.

In a few instances I have not been able to examine the skeletons of genera of doubtful position their reference to a family division may yet have to be altered. I have studied the fine series in the museums of Paris and Washing-

ton, besides a considerable number in my own collection. For the characters of many genera which I have not seen I have had to rely on the descriptions of others, especially of Drs. Peters and Günther.

EPANODONTA.

TYPHLOPIDÆ.

I. Muzzle covered above by rostral and internasal scuta.

a. Two ocular plates and a preocular.

One nasal plate ..... *Lethcobia* Cope.

aa. One ocular and a preocular.

One nasal plate ..... *Typhlops* Schn.

Two nasal plates ..... *Helminthophis*[1] Pet.

aaa. One ocular and no preocular.

One nasal plate ..... *Typhlina*[2] Wagl.

Two nasal plates ..... *Liotyphlops*[3] Pet.

II. Muzzle and front with five symmetrical scuta.

Two nasals and a preocular ..... *Anomalepis* Jan.

CATODONTA.

STENOSTOMIDÆ.

Superciliary scales present ..... *Stenostoma* Wagl.

No superciliary scales ..... *Rena* B. & G.[4]

TORTRICINA.

TORTRICIDÆ.

Intermaxillary bone dentate; eye covered by a single scute ..... *Tortrix* Oppel.

Intermaxillary edentulous; eye surrounded by distinct scales ..... *Cylindrophis* Wagl.

UROPELTIDÆ.

I. Tail terminating in a large shield.

Rostral plate produced posteriorly, separating the nasals ..... *Rhinophis* Hemp.

Rostral not produced; nasals in contact ..... *Uropeltis* Cuv.

II. Tail scaly to end.

Tail terminating in a disk of keeled scales; supraorbitals and postocular confluent. *Silybura* Gr.

Tail compressed, truncated, terminating in a bicuspid scale, the points superposed; postocular distinct ..... *Plectrurus* D. & B.

Tail tapering, terminal scute ending in a horizontal ridge; no chin-groove. *Platyplectrurus* Günth.

Tail tapering, ending in a single point; no chin-groove ..... *Teretrurus* Bedd.

Tail with smooth scales, terminating in one or two points; postocular united with superciliary; a median chin-groove ..... *Melanophidium* Gthr.

ASINEA.

XENOPELTIDÆ.

Eyes not covered with a plate; head with normal shields, with an interparietal added; scales smooth; anal and subcaudals divided; teeth equal ..... *Xenopeltis* Reinw.

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[1] *Rhinotyphlops* Jan.

[2] *Typhlina* Dum. Bibr. *Typhlinalis* Gray.

[3] *Rhinotyphlops* Pet.

[4] Cundea D. & B., not of Lacep. *Siagonodon* Peters.

PYTHONIDÆ.

I. Premaxillary teeth present.

α. Fossæ in labial plates of both jaws.

Scuta on end of muzzle only ..... *Morelia* Gray.
Scuta extending to between orbits ..... *Python* Daudin.
Scuta covering vertex and muzzle ..... *Liasis*[1] Gray.

αα. Fossæ in inferior labials only.

Muzzle shielded to frontal region ..... *Nardoa* Gray.

ααα. No labial fossæ.

Head shielded; tail prehensile ..... *Aspidiotes* Krefft.
Head with nine regular shields above; rostral plate protuberant; tail not prehensile ..... *Loxocemus* Cope.

II. No premaxillary teeth.[2]

Labial plates with fossæ; vertex and front squamous; nostril in one nasal; scales smooth ..... *Chondropython* Meyer.
Head covered with large scuta ..... *Aspidopython* Meyer.

BOIDÆ.

I. Tail prehensile.

α. Scales smooth.

β. Labial fossæ present.

Plates on muzzle only ..... *Xiphosoma*[3] Wagl.
Plates extending over muzzle and front ..... *Epicrates*[4] Wagl.

ββ. No labial fossæ.

Muzzle and front scaled; nasal plates meeting ..... *Lichanura* Cope.
Muzzle and front scaled; nasal plates widely separated ..... *Boa*[5] Linn.
Muzzle and front scutate; nares vertical ..... *Eunectes* Wagl.
Muzzle and front with scuta divided on the median line; nares lateral. *Chilabothrus*[6] D. & B.
Muzzle and front with median scuta; nares lateral ..... *Ungualiophis* Meyer.

αα. Scales carinate.

Top of head with symmetrical plates; nares between two ..... *Ungalia*[7] Gray.
Top of head with symmetrical plates; nares in a single plate ..... *Bolieria*[8] Gray.
Plates on muzzle only ..... *Casarea*[9] Gray.
Top of head scaly; rostral plate forming border of mouth ..... *Enygrus* Wagl.
Top of head scaly; labial plates meeting below rostral plate ..... *Trachyboa* Pet.

II. Tail not prehensile.

α. Palatine teeth well developed.

β. Rudiments of hind limbs visible.

A mental groove ..... *Gonglyophis* Wagl.
No mental groove ..... *Eryx*[10] Dand.

ββ. No visible rudiments of hind limbs.

Scales keeled; head very distinct ..... *Erebophis* Gthr.

αα. Palatine teeth none (Peters).

Scales smooth; top of head with symmetrical plates to between orbits; one nasal. *Calabaria*[11] Gray.

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[1] *Liopython* Hubrecht

[2] Teste Boulenger.

[3] *Corallus* and *Chrysenis* Gray.

[4] *Epicarsius* Fisch.

[5] *Acrantophis* Jan.

[6] Includes *Homalochilus* Fisch.; *Pelophilus* D. & B. (=*Sanzinia* Gray); *Dendrophilus* Jan. and *Platygaster* Seoane.

[7] *Tropidophis* D. & B. *Notophis* Hallow.

[8] *Platygaster* D. & B.

[9] *Leptoboa* D. & B.

[10] *Cusoria* Gray.

[11] *Rhoptrura* Peters; may belong to the Charinidæ

CHARINIDÆ.

Head scutate above; scales smooth; tail not prehensile; palatine teeth. *Charina*[1] Gray.

ACROCHORDIDÆ.

Body compressed, acute below ..... *Chersydrus* Cuv.
Body round, flat below ..... *Acrochordus* Hornst.

NOTHOPSIDÆ.

Scales above granular, with rows of tubercular scales; urosteges simple; no frontal or pariëtal plates ..... *Xenodermus* Rhdt.
Scales squamous; urosteges double; head scaly, with frontal and pariëtal plates. *Nothopsis* Cope.

COLUBRIDÆ.

Head conic, not distinct from the body, which is cylindric and rigid ... CALAMARINÆ.
Head slightly distinct, short; teeth entire, not enlarged in front ..... CORONELLINÆ.
Head similar to last; posterior tooth grooved ..... SCYTALINÆ.
Head more distinct and elongate, body and tail longer; teeth entire, not longer in front ..... NATRICINÆ.
Like the last, but grooved teeth posteriorly ..... PHILODRYADINÆ.
Very slender; pupil horizontal; grooved teeth ..... DRYOPHIDINÆ.
Less slender; not compressed; middle teeth elongate, posterior teeth grooved. PSAMMOPHIDINÆ.
Anterior maxillary and mandibular teeth enlarged ..... LYCODONTINÆ.
Anterior teeth not abruptly enlarged, posterior grooved; head wide, very distinct, body compressed ..... DIPSADINÆ.
Anterior teeth not abruptly enlarged, the posterior weak and not grooved; head very distinct from the body, which is compressed; no œsophageal teeth ..... LEPTOGNATHINÆ.
Maxillary teeth few and rudimental; body slender; hypapophyses piercing throat, and capped with enamel ..... DASYPELTINÆ.
Hypapophyses spinous to caudal region; anterior teeth not enlarged; body not slender; head distinct ..... *Colubrinæ*.

CALAMARINÆ.

I. Posterior maxillary tooth grooved.
* Subcaudal scuta.
One nasal; anal undivided ..... *Uriechis*[2] Pet.
Two nasals; anal divided ..... *Cercocalamus* Gthr.
** Subcaudal scutella.
† No internasals.
One nasal, no preocular ..... *Amblyodipsas* Pet.
One nasal, a preocular ..... *Apostolepis* Cope.
†† Two internasals; prefrontals united together.
One nasal; a preocular ..... *Phalotris* Cope.
††† Internasals united with nasals.
Postnasal distinct, anal divided ..... *Stenorhina* D. & B.
†††† Two internasals and two prefrontals.
a. Nasal plate single.
No preocular; no loreal ..... *Calamelaps*[3] Gthr.
One preocular; rostral not prominent ..... *Elapomorphus*[4] Wieg.

[1] *Wenona* B. & G.
[2] *Poiemon* Jan.
[3] *Miorelaps* Boetg.
[4] *Urobelus* Rhdt.

A preocular; rostral prominent ..... *Ogmius* Cope.
αα. Two nasal plates.
β. Two anal scuta.
No preocular; a loreal ..... *Emulius*[1] Cope.
A preocular; no loreal ..... *Tantilla*[2] B. & G.
A preocular and loreal, tail smooth ..... *Hydrocalamus* Cope.
A preocular and loreal, tail short, rugose ..... *Procinura* Cope.
ββ. One anal scutum.
A loreal and preocular; tail smooth ..... *Scolecophis* Cope.
II. Posterior maxillary teeth smooth.
* Subcaudal scuta.
† Internasals united.
Scales smooth ..... *Aspidura* Wagl.
Scales keeled ..... *Haplocercus* Gthr.
†† Internasals and prefrontals distinct.
α. Rostral not produced.
Postoculars not distinct from temporals; one nasal; loreal joined to preocular. *Achalinus* Pet.
Postocular, preocular, and two nasals ..... *Elapops*[3] Gthr.
αα. Rostral produced.
Two nasals and a loreal and preocular ..... *Rhinochilus* B. & G.
** Subcaudal scutella.
† Nasal scuta well developed.
‡ No internasal scuta.
‖ Rostral plate produced.
Prefrontals separated by rostral; nasals and first labial confluent ..... *Ficimia* Gray.
Prefrontals in contact; nasal distinct; rostral little produced ..... *Conopsis* Gthr.
Rostral much produced ..... *Rhynchonyx*[4] Pet.
‖‖ Rostral not produced.
Nasal confluent with first labial; preocular and loreal distinct ..... *Sympholis*[5] Cope.
Nasal distinct; loreal and preocular united ..... *Geophidium*[6] Pet.
‡‡ One internasal scutum.
‖ Prefrontals united.
Rostral much produced ..... *Ligonirostra*[7] Cope.
‖‖‖ Two prefrontals (rostral not produced).
Scales keeled; no preocular, two anals ..... *Haldea*[8] B. & G.
Scales keeled; no loreal; a preocular; anal double ..... *Falconeria* Theob.
Scales smooth; no preocular; two anals ..... *Farancia* Gray.
Scales smooth; no loreal; a preocular ..... *Pseudocyx*[9] Fitz.
Scales smooth; no loreal nor preocular; one anal; (? teeth) ..... *Calamophis* Meyer.
‡‡‡ Two internasals; one prefrontal.
Rostral much produced ..... *Procymna* Gray.
Rostral not produced, teeth equal ..... *Trimetopon* Cope.
Rostral not produced, teeth diacranterian ..... *Colorhegis* Cope.
‡‡‡‡ Two internasals and two prefrontals.
§ Rostral plate reaching frontal.
Nasals and first labial confluent ..... *Gyalopium* Cope.
§§ Rostral plate not reaching frontal.
α. Posterior maxillary teeth elongate.
Two nasals well separated from preocular ..... *Arrhyton* Gthr.

[1] Not of Bocourt Miss. Sci. Mex.
[2] *Homalocranium* D. & B.
[3] *Pariaspis* Cope.
[4] *Xenocalamus* Gthr.
[5] *Chilorhina* Jan.
[6] *Xylophis* Bedd.
[7] *Temnorhynchus* Smith.
[8] *Conacephalus* D. & B.
[9] *Dimades* Gray. *Calopisma* D. & B. *Hydrops* Wagl.

Two nasals in contact with frenoöcular ..... *Leptocalamus* Gthr.

aα. Teeth equal.

β. Superciliary plate absent.

Two nasals and a frenoörbital ..... *Colophrys* Cope.

ββ. Superciliary present.

γ. Rostral plate produced.

δ. Nasal plates distinct.

No loreal; anal divided; two nasals ..... *Geagras*[1] Cope.

A loreal; anal entire; two nasals ..... *Cemophora* Cope.

A loreal; anal divided; one nasal ..... *Chionactis*[2] Cope.

δδ. Nasal plates united with internasals.

A preocular and a divided anal ..... *Chilomeniscus*[3] Cope.

γγ. Rostral plate not produced.

ε. Palatine bones with teeth.

η. One nasal plate; one anal plate.

Scales smooth ..... *Homalosoma*[4] Wagl.

ηη. One nasal and two anal plates.

Loreal and preocular present ..... *Contia*[5] B. & G.

Loreal present, no preocular ..... *Abastor*[6] Gray.

Neither loreal nor preocular ..... *Oxyorrhos*[7] Fischer.

ηηη. Two nasal, one anal plate.

Maxillary bone very slender; scales smooth; a frenoörbital plate, *Stenognathus*.[8] D. & B.

Maxillary more robust; scales smooth; a frenoörbital plate .... *Rhabdosoma*[9] D. & B.

Maxillary more robust; scales keeled; a frenoörbital plate ..... *Elapoides*[10] Boie.

ηηηη. Two nasal and two anal scuta.

A loreal; no preocular; two pairs geneials ..... *Virginia* B. & G.

A loreal; no preocular; one pair geneials ..... *Adelphicus*[11] Jan.

A loreal and a preocular; two pairs geneials ..... *Sonora* B. & G.

No loreal; a preocular; jaws weak ..... *Brachyorrhos* Kuhn

εε. Palatine bones without teeth.

Two anals and nasals; a loreal and a preocular ..... *Oligodon* Boie.

Two anals and nasals; a loreal and no preocular ..... *Colobognathus* Pet.

†† Nasal scutum minute.

No internasals; preoculars present ..... *Calamaria* Boie.

Two internasals; a preocular ..... *Pseudorhabdium* Jan.

Two internasals; no preocular ..... *Oxycalamus* Cant.

††† No nasal scutum.

No loreal, nor pre- nor postocular ..... *Typhlogeophis* Günth.

CORONELLINÆ.

I. No palatine teeth.

Anals two; one internasal; scales smooth ..... *Tripeltis*[12] Cope.

Anal plate divided; two internasals; scales smooth ..... *Oligodon*[13] Boie.

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[1] *Ewulius* Boc. *Sphenocalamus* Fisch. *Pseudoßscimia* Boc.?

[2] *Lamprosoma* Hallow.

[3] *Bergenia* Steindachner.

[4] *Rhabdium* D. & B.

[5] *Cryptodacus* Peters. *Eirenis* Jan.

[6] *Carphophiops* Gerv. *Carphophis* D. & B. *Celuta* B. & G.

[7] 1879 | *Atractocephalus* Sauv. † 1880.

[8] *Platypteryx* D. & B.

[9] *Rhabdium* D. & B.

[10] *Geophis* Wagl. *Catastoma* Wagl.

[11] *Rhabdosoma* Boc. not D. & B. *Rhegnops* Cope.

[12] Gen. nov. type *Oligodon brevicauda* Gthr.

[13] *Rhynchocalamus* Gthr.

SCYTALINÆ.

α. Anterior teeth elongate.

Scales smooth; rostral plate obtuse ..... *Macroprotodon* Guich.

αα. Anterior teeth short.

β. Rostral plate not protuberant.

γ. Two rows of subcaudal scutella.

δ. Anal plate entire.

ε. Vertebræ with expanded neural spines.

Prefrontals united; a loreal; scales smooth ..... *Gerrhosteus* Cope.

εε. Vertebræ with narrow compressed neural spines.

Scale-pits double; pupil erect; rostral plate normal; two prefrontals, *Oxyrrhopus*[1] Wagl.

Rostral plate normal; one nasal plate; two prefrontals ..... *Tomodon* D. & B.

Rostral plate separating internasals; scale pores single; two prefrontals, *Trimerorhinus*[2] Smith.

δδ. Anal plate double.

ε. Scales smooth.

No scale-pits; tail short; rostral obtuse; nasals two; pupil round, *Erythrolamprus*[3] Boie.

One scale-pit; loreal not in orbit; rostral obtuse; nasals two; pupil round, *Tachymenis* Wiegem.

Loreal entering orbit; pupil erect; restral obtuse; nasals two .... *Tarbophis*[4] Fleisch.

One nasal plate; no scale-pits; rostral truncate; pupil erect ..... *Manolepis*[5] Cope.

εε. Scales keeled.

Pupil erect; anal double ..... *Dryophilax* Wagl.

γγ. One row of subcaudal scuta.

Two preoculars; head distinct; body compressed ..... *Dilypophis* Gthr.

Two preoculars; body round; head not distinct ..... *Hologerrhum* Günth.

One preocular; body round ..... *Scytale*[6] Boie.

ββ. Rostral plate protuberant.

γ. Rostral not recurved.

Loreal not entering orbit; pupil round; two nasal plates; rostral moderate, *Conophis* Pet.

Scales not grooved; rostral very prominent ..... *Rhamphiophis* Pet.

Scales grooved; rostral prominent ..... *Rhagerhis* Pet.

γγ. Rostral plate recurved.

One row of subcaudal scuta ..... *Phimophis*[7] Cope.

Two rows of subcaudal scutella ..... *Rhinostoma* Wagl.

NATRICINÆ.

A. Posterior maxillary teeth not abruptly longer than those that precede them.

1. Rostral plate expanded transversely and with free lateral borders.

Several preoculars; scales smooth; anal and subcaudals double ... *Salvadora*[8] B. & G.

2. Rostral plate not expanded and free laterally.

* Two median dorsal rows of scales.

One preocular plate ..... *Herpetodryas*[9] Boie.

Two preocular plates ..... *Zaöcys* Cope.

** One median dorsal row of scales.

† Body little or not compressed.

‡ Internasals not confluent with nasals.

α. Several loreal plates.

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[1] Includes *Brachyrhytum* D. & B.

[2] *Psammophylax* (Fitz) Günther.

[3] *Coniophanes* Hallow.

[4] Günther says (Catal. Brit. Mus., p. 33) "anal bifid."

[5] Type *Tomodon nasutus* Cope.

[6] *Ollisthenes* Cope.

[7] *Rhinosimus* D. & B. preoccupied

[8] Preoccupied in botany, hence *Phimothyra* Cope.

[9] *Phyllosira* Cope.

Two or more preoculars ..... *Ptyas* Cope.
αα. One loreal (rarely two).
β. Four or more prefrontals.
Anal entire; scales keeled ..... *Pityophis* Holbr.
ββ. Two prefrontals only.
γ. Two nasal plates.
δ. Anal entire.
Scales smooth; rostral produced ..... *Rhinechis*[1] Mich.
One preocular; rostral not produced ..... *Spilotes*[2] Wagl.
δδ. Anal double.
ε. One preocular.
Form robust; scales without pits; tail moderate ..... *Graysia*[3] Gthr.
Form robust; tail moderate; two scale-pits ..... *Natrix*[4] Laur.
Like Coluber, but median dorsal row of scales much enlarged ..... *Xenelaphis* Gthr.
Form elongate; tail long; two scale-pits ..... *Drymobius*[5] Cope.
Form very slender; tail very long ..... *Dendrophis* Boie.
εε. Two preoculars.
Scales keeled ..... *Elaphis* Aldv.
Scales smooth ..... *Bascanium*[6] B. & G.
γγ. One nasal plate.
Scales keeled; a loreal plate ..... *Cyclophis*[7] Gthr.
Scales smooth; a loreal plate ..... *Liopeltis* Cope.
Scales smooth; no loreal ..... *Phragmitophis* Gthr.
‡‡ Internasals confluent with nasals.
Scales smooth with one pit; anal divided ..... *Symphimus* Cope.
†† Body much compressed.
One nasal plate; a frenoörbital ..... *Dryocalamus* Gthr.
Two nasals; a frenoörbital; teeth equal ..... *Odontomus*[8] D. & B.
Two nasals; loreal and preocular distinct ..... *Gonyosoma* Wagl.
One nasal; a loreal; scales keeled; teeth equal ..... *Phyllophis* Gthr.
AA. Posterior maxillary tooth abruptly longer than those which precede it.
α. Maxillary tooth series uninterrupted (one preocular).
β. Moderately elongate.
Scales smooth; two nasals; a frenoörbital ..... *Nymphophidium* Gthr.
Scales keeled; one loreal; one preocular ..... *Herpetoreas* Gthr.
ββ. Very slender.
γ. Anal double.
Scales keeled; no loreal ..... *Leptophis*[9] Bell.
Scales keeled; a loreal ..... *Hapsidophrys* Fischer.
Scales smooth; a loreal ..... *Philothamnus*[10] Smith.
γγ. Anal single.
Scales smooth; a loreal ..... *Chlorophis*[11] Hallow.
αα. A toothless space in front of the long maxillary tooth.
β. One preocular; anal double.
γ. Form very elongate.

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[1] *Arizona* Kenn.
[2] *Cynophis* Gray. *Compsosoma* D. & B. *Celognathus* Fitz. *Geoptyas* Steind.
[3] *Heteronotus* Hallow., nom. praeocc. hinc *Glaniolestes* Cope. *Lejonotus* Jan.
[4] Spec. Syn. Rept. 1768, p. 73; Cope; *Calopeltis* Bp., 1840; *Scotophis*, B. & G., 1853; *Coluber* Linn.-Günther, 1858.
[5] *Dendrophidium* Cope; *Xenurophis* Gthr.
[6] *Coluber* Dum., Garm.; *Masticophis* B. & G.
[7] *Opheodrys* Fitz, Cope. *Philophyllophis* Garm.
[8] *Hydrophobus* Gthr.
[9] *Ahætulla* Gthr. *Thrasops* Hallow.
[10] *Rhamnophis* Gthr. *Gastropyxis* Cope.
[11] *Herpetæthiops* Gthr.

A loreal; scales smooth ..... *Uromacer* D. & B.
γγ. Form moderately elongate.
A loreal; scales smooth, with two pits ..... *Alsophis* Cope.
No loreal; scales smooth ..... *Ocyophis*[1] Cope.
ββ. Two or more preoculars.
Orbit resting on labials; one loreal; two anals; two scale-pits ..... *Zamenis* Wagl.
Orbit surrounded by scales; anal single; two scale-pits; one loreal ... *Periops* Wagl.
Orbit surrounded by scales; two or more loreals; anal single; two scale-pits. *Chilolepis*[2] Cope.
"Numerous small scales occupying the place of the frontals;" eye resting on scales. *Spalerophis* Jan.
Orbit resting on labials; two anals; one scale-pit ..... *Tyria*[3] Cope.
One anal; no scale-pits ..... *Zamenophis* Gthr.

PHILODRYADINÆ.

A. Body rounded, not compressed.
α. Scales grooved.
Crown and lores grooved; one nasal; two loreals ..... *Malpolon*[4] Fitz.
αα. Scales smooth.
Two loreals; middle teeth equal ..... *Dirrhox*[7] Cope.
One loreal; median teeth equal ..... *Philodryas* Wagl.
One loreal; median maxillary teeth long ..... *Jaltris* Cope.
ααα. Scales keeled.
One loreal; median teeth equal ..... *Tropidodryas* Cope.
AA. Body slender, compressed.
α. Subcaudal scutella.
Nostril normal; two nasals; two anals ..... *Chrysopelea* Boie.
Nostril round in a single nasal; two anals ..... *Ichthycyphus* Gthr.
Nostril semicircular, valvular ..... *Dromophis* Pet.
αα. Subcaudal scuta.
Anal divided ..... *Bucephalus* Sm.

DRYOPHIDINÆ.

I. Middle maxillaries not elongate, posteriors grooved.
α. An elongate nasal appendage.
Nasal and scuta undivided; scales keeled ..... *Langaha* Brug.
αα. No nasal appendage.
Scales keeled ..... *Dryophis*[5] Boie.
Scales smooth ..... *Dryinus* Wagl.
II. Middle maxillaries elongate; posteriors grooved.
α. An elongate nasal appendage.
Pupil horizontal ..... *Passerita* Gray.
αα. No elongate nasal appendage.
A loreal plate; prenasals joined on the middle line ..... *Gephyrinus*[6] Cope.
A loreal plate; nasals not joined ..... *Tragops* Wagl.
No loreal plate; nasals separate ..... *Tropidococcyx* Gthr.

PSAMMOPHIDINÆ.

Anal entire; a loreal ..... *Psammodynastes* Gthr.
Anal divided; a loreal ..... *Psammophis* Wagl.
Nostril in prenasal; no loreal ..... *Mimophis* Gthr.

[1] Type *Dromicus ater* Gosse.
[2] Type *Coluber cliffordii* Schl.
[3] Type *T. dahlii* Fitz.
[4] *Cœlopeltis* Wagl. *Taphrometopon* Brandt.
[5] *Thelotornis* Smith. *Cladophis* Dum.
[6] Type *Dryophis fronticincta* Gthr.
[7] *Callirhinus* Girard nec Cuvierii.

γ. Longe
Two nasals; body
γγ. Long
Scales keeled; two
Scales smooth; tw
Scales smooth; tw
Scales smooth; one
αα. Subcaudi
Scales keeled .....
Scales smooth.....

α. Subcaudal
Teeth of equal lengt
Teeth elongate poste
Teeth longer anterio
αα. Subcaudal
β. A median
Maxillary bone very
Maxillary bone long;
ββ. No medi
Teeth equal; no inte
Teeth weak; equal;
Teeth longer in front

I. Subcaudal scuta
Parietal plates replac
II. Subcaudal scute
α. No teeth ant
Scales smooth.....
αα. Median ma
Nostril large, between

Two nasals inclosing nostril; body elongate, compressed; anal entire; vertebrals generally larger ..... *Dipsas*[1] Laur.

Two nasals inclosing nostril; body less compressed; anal double; vertebral row not larger; one loreal ..... *Sibon*[2] Fitz.

No nasal; vertebrals equal ..... *Hemidipsas*[3] Gthr.

aaα. Median maxillary teeth shortened.

Two nasals and two or more loreals; anal double; vertebrals equal, *Trimorphodon* Cope.

DASYPELTINÆ.

No grooved maxillary tooth; no loreal plate; scales keeled; head very distinct, *Dasypeltis*[4] Wagl.

A grooved maxillary tooth; a loreal plate; scales smooth; head little distinct, *Elachistodon* Rhdt.

COLUBRINÆ.[5]

I. A grooved posterior maxillary tooth.

α. Scales keeled.

β. One internasal plate.

Parietal plates undivided ..... *Homalopsis* Kuhl.

ββ. Two internasal plates.

Parietal plates subdivided ..... *Cerberus* Cuv.

aa. Scales smooth.

β. One internasal plate.

γ. Gastrosteges with two keels.

Parietal plates subdivided ..... *Hipistes*[6] Gray.

γγ. Gastrosteges not keeled.

Nasal plates in contact behind rostral; eye resting on labial plates, *Hypsirhina*[7] Wagl.

Nasal plates in contact; eye bounded below by scales ..... *Tachyplotus* Rhdt.

Nasal plates separate; eye on labials ..... *Fordonia*[8] Gray.

Nasal plates separate; eye bounded with scales below ..... *Cantoria*[9] Gird.

ββ. Two internasal plates.

Supraorbital and posterior labial plates subdivided; two anals ..... *Homalophis* Pet.

Nasals in contact behind rostral; parietals entire ..... *Ferania*[10] Gray.

Two pairs of prefrontals; nasal plates separate, undivided; eye on labials; anal double ..... *Heliophis* Müller.

II. Posterior maxillary teeth not grooved.

* Scales keeled.

† Dentition diacranterian.

One internasal plate; no scale-pits ..... *Helicops* Wagl.

Two internasals; no scale-pits ..... *Coluber*[11] Linn.

Two internasals; two scale-pits ..... *Bothrodytes*[12] Cope.

†† Dentition syncranterian or longer behind.

* Muzzle with a pair of tentacular processes.

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[1] *Beiga* Fitz. *Triglyphodon* et *Himantodes* D. & B. *Eudipsas* Gthr. *Toxicodryas* Hallow.

[2] *Crataphopeltis* Fitz.

[3] *Chamætortus* Gthr.

[4] *Elachistodon* Jour. *Diodon* Owen. *Anodon* Smith.

[5] *Homalopsinæ* Cope, Proceedings Academy Philadelphia, 1864, p. 167.

[6] *Elitis* Gray.

[7] *Eurostus* D. & B. Pt. 7 *Phytolopsis* Gray.

[8] *Gerarda* Gray. *Campylodon* D. & B.

[9] *Hydrodipsas* Peters.

[10] *Trigonurus* D. & B. *Feranoides* Carlleyle.

[11] Laurenti Spec. Synops. 1768, p. 94. *Amphiëma* D. & B.

[12] Gen. nov.; type *Amphiëma submiliatum* Reinwt.; second species *B. tigrinus*=*A. tigrinum* Boie.

One internasal plate; parietals undivided ..... *Herpeton* Lac.

** No tentacular processes.

α. One internasal plate.

No scale-pits ..... *Atretium* Cope.

$\alpha\alpha$. Two internasal plates.

β. Two nasal plates.

Anal plate divided; two scale-pits ..... *Tropidonotus*[1] Kuhl.

Anal plate single; no scale-pits ..... *Eutænia* B. & G.

$\beta\beta$. One nasal plate.

Anal plate single; rostral produced laterally ..... *Stypocemus*[2] Cope.

Anal plate divided; rostral normal ..... *Amastridium* Cope.

†† Dentition isodont, or shorter behind.

a. Anal plate divided.

A loreal plate ..... *Regina*[4] B. & G.

No loreal plate ..... *Storeria*[5] B. & G.

$\alpha\alpha$. Anal plate entire.

β. Two internasals, one prefrontal.

$\beta\beta$. Two internasals, two prefrontals.

A loreal; two nasals; a preocular ..... *Chersodromus* Rhdt.

Head well distinguished; a loreal and preocular plates ..... *Atomarchus* Cope.

Head not distinct; a loreal and a preocular plate ..... *Tropidoclonium* Cope.

Head not distinct; a preocular; no loreal plate ..... *Adelophis* Dugès.

A loreal; no preocular plate ..... *Ninia*[6] B. & G.

A loreal and preoculars; teeth longer anteriorly ..... *Prymnomiodon* Cope.

$\beta\beta\beta$. One internasal plate; two prefrontals.

Scales keeled; two nasals and a loreal ..... *Haldea*[7] B. & G.

** Scales smooth.

α. Dentition diacranterian.

One internasal ..... *Liodytes*[8] Cope.

$\alpha\alpha$. Dentition syncranterian.

Two internasals; one prefrontal ..... *Hydromorphus*[9] Pet.

One internasal plate; two prefrontals; anals two ..... *Lymnophis* Gthr.

Two internasal plates; two prefrontals; anals two ..... *Hypsirhynchus*[10] Gthr.

$\alpha\alpha\alpha$. Dentition isodont.

Two internasals; anal entire ..... *Ablabes*[11] B. & D.

ACONTIOPHIDÆ.

Rostral plate deeply grooved below; nasal single; cephalic plates normal; scales smooth; body round; teeth, the posterior longest, not grooved, *Acontiophis* Gthr.

PROTEROGLYPHA.

HYDROPHIDÆ.[12]

I. Gastrosteges wide, flat.

Two pairs of frontal shields ..... *Platurus* Latr.

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[1] *Tachymenis* Fitz. Cope, Proc. Acad. Phila., 1864, p. 167. *Hydræthiops* Günth. (nares superior).

[2] *Nerodia* B. & G.

[3] *Chilopoma* Cope, preoccupied.

[4] *Tretanorhinus* D. & B. † *Xenochrophis* Gthr.

[5] *Ischnognathus* D. & B.

[6] *Streptophorus* D. & B.

[7] *Conocephalus* D. & B.

[8] Type *Helicops alleni* Garman.

[9] An *Trimetopon* Cope?

[10] An *Pseudaspis* Cope, type *Coronella cana* L.; D. & B.

[11] *Natrix* Gthr. *Neusterophis* Gthr. *Lycodonomorphus* Fitz. sine diagnosis; nec *A* auct.,=*Rhadinæa*, etc.

[12] This table is mostly from Günther, Reptiles Brit. I

II. Gastrosteges wide, with two keels.
Scales imbricate; one nasal ..... *Aepysurus* Lacep.
Top of head scaly; two nasals ..... *Pelagophis* Pet. & Dor.
III. Gastrosteges narrow, rudimentary, or absent.
* Nasals separated by frontals.
Gastrosteges distinct to vent ..... *Distira* Lacep.
** Nasals contiguous.
Head covered with scales behind ..... *Acalyptus* D. & B.
Head short, entirely shielded: no symphyseal notch ..... *Hydrophis* Daud.
Head moderate, entirely shielded; a deep symphyseal notch ..... *Enhydrina* Gray.
Snout long, spatulate ..... *Pelamis* Daud.

NAJIDÆ.

I. Grooved teeth behind two perforated teeth on the os maxillare.
Head-shields normal; no loreal; scales smooth; form fusiform ..... *Ogmodon*[1] Pet.
II. Solid teeth behind the fang on the os maxillare.
A. Loreal plate present.
Subcaudals entire; scales smooth ..... *Denisonia* Krefft.
AA. Loreal plate absent.
α. The neck with few scales, not extensible.
β. Subcaudal scuta one-rowed.
γ. Scales of vertebral row equal to others.
Nasals two; scales smooth; anal bifid ..... *Pseudechis* Wagl.
One nasal; scales smooth; anal single ..... *Hoplocephalus*[2] Cuv.
One nasal; scales keeled; anal single ..... *Tropedechis* Gthr.
αα. Scales of vertebral line enlarged.
Scales smooth; two nasals; anal entire ..... *Bungarus* Daud.
ββ. Subcaudal scuta two-rowed.
γ. Scales of vertebral row equal.
Rostral plate normal; two nasals ..... *Diemenia*[3] Gray.
Rostral plate narrow; produced backwards above; two nasals ..... *Pseudonaja* Gthr.
Rostral wide, prominent, depressed; one nasal ..... *Furina*[4] D. & B.
Rostral normal; one nasal; anal double ..... *Cacophis*[5] Gthr.
γγ. Scales of vertebral line enlarged.
Scales smooth ..... *Megærophis*[6] Gray.
αα. Neck extensible, covered with more numerous scales.
β. Anal entire; subcaudals two-rowed.
No postparietal plates ..... *Naja*[7] Laur.
Postparietals present ..... *Ophiophagus* Gthr.
III. No solid maxillary teeth.
α. Subcaudal scuta in two rows.
β. Rostral plate much developed.
Rostral free at the sides; scales keeled ..... *Cyrtophis* Sund.
Rostral not free; scales smooth; anal entire ..... *Aspidelaps* Fitz.
Rostral not free; anal entire; two nasals ..... *Rhinelaps* Gthr.
ββ. Rostral not enlarged.
Scales keeled ..... *Sepedon* Merr.
Scales smooth ..... *Callophis* Gr.
αα. Subcaudal scutella in one row.
One nasal; a spine at end of tail ..... *Acanthophis* Daud.

[1] *Lebionaris* Brocchi.
[2] *Alecto* Wagl.
[3] *Pseudelaps* D. & B. *Elapsoidea* Bocage. *Hemibungarus* Pet.; includes *Brachysoma triste* Gthr.
[4] *Brachyurophis* Gthr.
[5] *Brachysoma* Gthr. *Boulengerina* Dollo.
[6] *Zoacrolaus* Gthr.
[7] *Tropis* Eichw.

ELAPIDÆ.

α. Internasal plate touching the nasal laterally.

One nasal plate ..... *Vermicella*[1] Gray.
Two nasal plates ..... *Elaps* Schn.

αα. Internasal reaching first labial plate.

One nasal; no loreal ..... *Microcosma* Jan.

DENDRASPIDIDÆ.

No solid teeth behind fang; anal and subcaudal plates divided; scales smooth. *Dendraspis*[2] Schl.

SOLENOGLYPHA.

CAUSIDÆ.

Subcaudals double, anal entire; scales keeled; rostral prominent, with recurved border ..... *Heterophis* Pet.
Subcaudal and anal plates double; scales keeled; rostral normal ..... *Causus* Wagl.
Subcaudals and anal entire; scales smooth; rostral normal; a loreal.. *Dinodipsas* Pet.

ATRACTASPIDIDÆ.

Head not distinct; two nasals; a loreal; scales smooth; subcaudals entire. *Atractaspis* Smith.

VIPERIDÆ.

I. Urosteges two-rowed.

Nostril between two plates ..... *Vipera*[3] Laur.
"Nostril between three plates" (Gthr.) ..... *Daboia* Gray.
Nostril surrounded by scales and a nasal; horn-like supraocular scales.. *Cerastes* Wagl.
Nostril surrounded by scales and a supranasal; no supraocular nor nasal horns. *Bitis*[4] Gray.
Nostril surrounded by scales and a supranasal; horn-like scales above latter; no supraocular horns ..... *Clotho* Gray.

II. Urosteges one-rowed.

Body and tail cylindric ..... *Echis*[5] Merr.
Body and tail compressed and prehensile ..... *Atheris*[6] Cope.

CROTALIDÆ.

I. No rattle.

β. Urosteges two-rowed.

Top of head scaled; urosteges four-rowed at end; a caudal spine..... *Lachesis* Wagl.
Top of head with small scales; tail normal..... *Bothrops*[7] Wagl.
Top of head with large imbricate shield-like scales ..... *Peltopelor* Gthr.
Top of muzzle scaled; rest of head shielded ..... *Hypnale* Cope.
Top of head with nine shields; scales carinate ..... *Trigonocephalus* Oppel.
Top of head with nine shields; scales smooth ..... *Calloselasma*[8] Cope.

ββ. Urosteges one-rowed.

Body and tail cylindric, not prehensile; head scaly..... *Bothriopsis* Pet.
Body and tail compressed, prehensile; head scaly, scales normal..... *Bothriechis* Pet.
Body and tail compressed, prehensile; head scaly; a row of scales outside the superciliary shield ..... *Teleuraspis* Cope.

[1] *Homorelaps* Jan. *Poecilophis* Gthr.
[2] *Dinophis* Hallow.
[3] *Pelias* Wagl.
[4] *Echidna* Wagl., not Forster.
[5] *Toxicoa* Gray.
[6] *Poecilostolus* Gthr.
[7] *Trimesurus* Gray, Gthr., Peters. *Tropidolæmus* Wagler. *Megæra* Gray. *Atropos* Wagl. *Lophophis* Garm.
[8] *Leiolepis* D. & B. nec Cuv.

Body and tail not prehensile; nine normal head-shields ..... *Ancistrodon*[1] Beauv.

II. A rattle.

Head with nine scuta above ..... *Crotalophorus*[2] Gray.

Head with scales above ..... *Crotalus*[3] Linn.

Synopsis of the genera.

Genera.	*No.*
Typhlopidæ	6
Stenostomidæ	2
Tortricidæ	2
Uropeltidæ	7
Xenopeltidæ	1
Pythonidæ	8
Boidæ	16
Charinidæ	1
Acrochordidæ	2
Nothopidæ	2
Colubridæ—	
Calamarinæ	57
Coronellinæ	23
Scytalinæ	18
Colubrinæ	35
Philodryadinæ	9
Dryophidinæ	7
Psammophidinæ	3

Genera.	*No.*
Colubridæ (*continued*)—	
Lycodontinæ	17
Leptognathinæ	7
Dipsadinæ	7
Dasypeltinæ	2
Homalopsinæ	29
Acontiophidæ	1
Hydrophidæ	8
Najidæ	19
Elapidæ	3
Dendraspididæ	1
Causidæ	3
Atractaspididæ	1
Viperidæ	7
Crotalidæ	12
Total	316

A number of generic names have been given by authors with definitions which do not refer to the dentition. On this account I have been unable to include them in the above tables. I have credited generic names to authors who have published the first description, and not to those who have given them as *nomina nuda*.

CATODONTA.

STENOSTOMIDÆ.

Stenostoma Wagler.

Dum. et Bibr., vi, 32 † *Rena* Baird and Girard.

STENOSTOMA MACROLEPIS Peters, Monatsber. Akad. Wiss. Berlin, 1857, p. 402; Jan, Iconogr. Gen. Ophid., Fasc. ii, tab. v, vi, fig. 10. ? *S. myopicum* Garman, Mem. Mus. Comp. Zŏol. Cambridge, 1883, p. 6.

Las Aguillĭlas, Michoacan, *Dugés.*

STENOSTOMA DULCE Baird, Girard, *Rena dulcis* Bd. Girard, Catal. Serpents, 142.

Northern Mexico, *Jan, Peters;* Batopĭlas, Chihuahua, *Wilkinson.*

STENOSTOMA PHÆNOPS Cope, Journ. Acad. Phila., 1875, p. 128.

Coban, Guatemala, *H. Hague;* Tehuantepec, *Sumichrast;* Jalapa, *Comision Geográfica-Exploradora.*

STENOSTOMA ALBIFRONS Wagler, Dum. et Bibr., vi, 327; Cope, Journ. Acad. Phila., 1875, p. 128.

Panama, *C. B. Adams.*

Rena Baird & Girard.

Catal. N. Amer. Rept. Serpents, 1853, p. 142; *Siagonodon* Peters, Gesellsch. d. Naturforsch. Freunde Berlin, 1881, p. 71; *Catodon* Dum. Bibr., Erp. Gén., 1844, vi, p. 318, not of Linn.

[1] *Cenchris* Daud.

[2] *Caudisona* Fitz., Wagl. *Systrurus* Garman.

[3] *Caudisona* Laur. *Crotalophorus* Linn., pt., *Uropsophus* Wagl.

RENA DUGESI Bocourt; *Siagonodon dugesi* Bocourt, Miss. Sci. au Mex., Reptiles, p. 507, pl. xxi, fig. 9; xxx, fig. 4.
Guanajuato, *Dugés.*

RENA HUMILIS Baird, Girard, Catal., loc. cit., p. 143; *Stenostoma humile* Cope, Check List Batr. Rept. N. Amer., p. 44.
Lower California, *Belding.*

EPANODONTA.

TYPHLOPIDÆ.

Typhlops Schn.

Dum. et Bibr., vi, 279.

TYPHLOPS MICROSTOMUS Cope, Proc. Acad. Phila., 1866, 125.
Yucatan, *Schott.*

TYPHLOPS BASIMACULATUS Cope, Proc. Acad. Phila., 1866, p. 320; *Typhlops perditus* Peters, Monatsber. Acad. Berlin, 1869, p. 435.
Cordova and Orizaba, *Sumichrast.*

TYPHLOPS TENUIS Salvin, Proc. Zool. Soc. London, 1860, p. 454.
Guatemala, *Salvin.*

Helminthophis Peters.

Monatsber. K., Akad. Wiss., 1860, p. 517. *Idiotyphlops* Jan, Arch. p. l. Zoölogia, i, 1861, p. 186.

HELMINTHOPHIS FRONTALIS Peters, loc. cit., fig. 1; Bocourt, Miss. Sci. Mex., 502, pl. xxi, fig. 2.
Costa Rica, *Hoffman.*

Liotyphlops Peters.

Gesellsch. Nat. Freunde Berlin, 1881, 69.

LIOTYPHLOPS ALBIROSTRIS Peters, Monatsber. Berl. Akad. Wiss., 1881, p. 69; Bocourt, Miss. Sci. Mex., 501, pl. xxx, fig. 1; *Rhinotyphlops albirostris* Peters, Monatsber. Ak. Wis. Berlin, 1857, p. 402.
Veragua, Central America, *Peters.*

Anomalepis Jan.

Jan et Sordelli Iconogr. des Ophidiens, 1864, p. 6.

ANOMALEPIS MEXICANUS Jan, loc. cit., pls. v, vi, fig. 1; Bocourt, Miss. Sci. Mex., 503, pl. xxix, figs. 4, 5.
"Mexico," *Jan.*

ASINEA.

PYTHONIDÆ.

Loxocemus Cope.

Proc. Acad. Phila., 1861, pp. 76–304.

LOXOCEMUS BICOLOR Cope, loc. cit., Günther, Ann. and Mag. Nat. Hist., 1863; *Loxocemus sumichrastii* Bocourt, Journ. de Zoologie, 1876, p. 404; *Platoceryx brownii* Jan, Elenco, 1863, p. 20; Iconographied. Ophidens 3d Liv. pl. 3.
Guatemala, *Dow;* Tehuantepec, *Sumichrast;* Colima, *Xantus.*

CHARINIDÆ.

Charina Gray.

Catal. Brit. Mus., 1849, p. 113; *Wenona* Baird, Girard, Catal. N. Am. Reptiles, Serpents, p. 139, 1853.

CHARINA BOTTÆ Blainv., Nouvelles Ann. Mus. Hist. Nat., iii, 1834, p. 57.
Lower California, *Botta.*

BOIDÆ.

Lichanura Cope.

Proc. Acad. Phila., 1861, p. 304; Bocourt, Miss. Sci. Mex., p. 513.

LICHANURA TRIVIRGATA Cope. Proc. Acad. Phila., 1861, p. 304.
Lower California, *Xantus, Belding.*

LICHANURA MYRIOLEPIS Cope, Proc. Acad. Phila., 1868, p. 2.
Lower California, *Xantus.*

LICHANURA ROSEIFUSCA Cope, Proc. Acad. Phila., 1868, p. 2.
Lower California, *Xantus.*

Boa Linn.

Dum. et Bibr. Erp. Gén., vii.

BOA IMPERATOR* Daud., Dum. et Bibr., vi, p. 519; Cope, Journ. Acad. Nat. Sci. Phila., 1875, p. 130; *B. eques* "Eyd. Soul.", Cope, Proc. Acad. Phila., 1860, 243; 1866, 126; *B. ortonii* Cope, Proc. Amer. Philos. Soc., 1877, p. 19.
Costa Rica, *Gabb;* Greytown, Nicaragua, *Caldwell;* Nicaragua, *MacNiel;* Guatemala, *Dow;* Yucatan, *Schott;* Vera Cruz, *Sartorius;* Colima, *Xantus;* Jalapa and Jicaltepec, Vera Cruz, *Comision Geográfica.*

BOA ? MEXICANA Rapp, M. S., Bocourt, Mis. Sci. Mex., 521; *B. diviniloquax* var. *mexicana* Jan et Sordelli, Iconogr. des Ophidiens, 1865, 82, pl. iv.
"Mexico," *Rapp.*

Ungualiophis Müller.

Verh. Nachtrag, z. Catal. Herp. Samml. Mus. Basel, 1880, p. 26; Nomen. Katalog. Mus. Universitätskab. Verhandl. Naturforsch. Gesellsch., Basel, 1878, p. 652, descriptio. *Peropodum* Bocourt, Miss. Sci. Mex., p. 523.

UNGUALIOPHIS CONTINENTALIS Müller, loc. cit. et 1878, pl. i; *Peropodum guatemalensis* Bocourt, Miss. Sci. Mex., p. 523, pl. xxxi, fig. 5.
N. E. Guatemala, *Müller.*

Epicrates Daudin.

Dum. et Bibr. Erp. Gén., vi, p. 552.

EPICRATES CUPREUS Fisch.; *E. concolor* Jan.
Costa Rica, *Jan.*

EPICRATES CENCHRIA Daud., Dum. et Bibr., vi, p. 555; Cope, Jour. Acad. Phila., 1875, p. 130.
Costa Rica, *Van Patten.*

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*As remarked by Bocourt, the orbital ring of scales in this species is sometimes separated from the superior labial plates by a row or two of scales, as in the *B. constrictor.* In four specimens from Colima it is so separated in three, and in two from Vera Cruz it is so separated on both sides in one, and in the other, on one side of the head and not on the other. In a specimen from Greytown, Nicaragua, referred in the Proceedings of the American Philosophical Society, 1877, p. 19, to the *B. ortonii* it is separated by two rows, and there are fifteen scales between the eyes instead of the usual number, eleven. I believe all these individuals to belong to one species, which is, as stated by Sumichrast, generally distributed in Mexico. The numbers of scuta and scales in several specimens is as follows: Greytown, scales, 69 rows; gasteosteges, 242; ♀ Tehuantepec, sc. 69; g. 249, mosteges, 58; Colima (four specimens), sc. 71–3–4; gasteosteges (one specimen), 242; mosteges, 58; Cordova, Vera Cruz, sc. 73; Mirador, Vera Cruz, sc. 65; g. 238; u. 53. There are then three well-defined species of Boa: the *B. constrictor, B. imperator,* and *B. diviniloquax.* The *B. ortonii* must be referred to the *B. imperator,* and the *B. mexicana* has not yet been satisfactorily separated from the *B. diviniloquax.* The *B. eques* continues to be represented by the type specimen only.

Xiphosoma Wagler.

Nat. Syst. Amphib., 1830, p. 167; Dum. et Bibr., vii.

XIPHOSOMA ANNULATUM Cope, Jour. Acad. Phila., 1875, p. 129, pl. xxviii, fig. 6.
Costa Rica, *Gabb.*

XIPHOSOMA RUSCHENBERGERI Cope, loc. cit.
Panama, *Ruschenberger.*

NOTHOPIDÆ.

Nothopsis Cope.

Proc. Acad. Phila., 1871, p. 201.

NOTHOPSIS RUGOSUS Cope, loc. cit., p. 201; pl. xvii; figs. 1–7.
Darien, *Selfridge.*

COLUBRIDÆ.

Leptognathus Dum. Bibr.

Erp. Gén., vii, 456; Gthr. Catal., 1858, p. 177; Cope, Proc. Acad. Phila., 1868, 135; *Petalognathus, Dipsadomorus, Anholodon, Leptognathus* Dum. Bibr., vii, 1853.

LEPTOGNATHUS STRATISSIMA Cope, Proc. Amer. Philos. Soc., 1885 (nov.), p. 280 (1886).
Panama, *Nelson.*

LEPTOGNATHUS NEBULATA Linn; *Petalognathus nebulatus* Dum. et Bibr., vii, 464; *Leptognathus* Gthr, Cope, loc. cit., 1868, p. 108; *L. nebulata* Cope, Journ. Acad. Phila., 1875, p. 131.
Nicaragua, *Caldwell, MacNiel;* Costa Rica, *Gabb, Van Patten;* Vera Cruz, Tierra caliente, *Sumichrast;* Jicaltepec, Vera Cruz, *Comision Geográfica.*

LEPTOGNATHUS ANNULATA Günther, Ann. and Mag. Nat. Hist., 1872, p. 33; Cope, Journ. Acad. Phila., 1875, p. 130.
Costa Rica, *Günther.*

LEPTOGNATHUS ARGUS Cope, Journ. Acad. Phila., 1875, p. 130, pl. xxvii, f. 1; xxviii, f. 7.
Sipurio, E. Costa Rica, *Gabb.*

LEPTOGNATHUS PICTIVENTRIS Cope, loc. cit., pl. xxvii, fig. 8.
E. Costa Rica, *Gabb.*

LEPTOGNATHUS ARTICULATA Cope, Proc. Acad. Phila., 1868, 107; "*Dipsas brevis* D. & B," Cope, loc. cit., 1860, 266.
Veragua, Costa Rica, *Mitchell.*

LEPTOGNATHUS VIGUIERI Bocourt, Bull. Soc. Philomath. Paris, 1884, March, sep., p. 4
Darien, *Viguier.*

LEPTOGNATHUS BREVIFACIES Cope, loc. cit., 1866, 127; 1868, 108.
Yucatan, *Schott.*

LEPTOGNATHUS SEMICINCTUS Bocourt, Bull. Soc. Philomath. Paris, March, 1884, sep., p. 7.
Vera Paz, *Mission Scientifique.*

LEPTOGNATHUS ANTHRACOPS Cope, loc. cit., 1868, pp. 108, 136.
Central America, *Bridges, Davidson;* W. Nicaragua, *MacNiel, Flint.*

LEPTOGNATHUS TORQUATA Cope, Proceeds. Amer. Philos. Soc., 1884, p. 72, *Dipsadomorus fasciatus* Bocourt, Bull. Soc. Philomath. Paris, 1884, March; nec *Leptognathus fasciatus* Günther, 1868.
Yucatan, *Boucard.*

LEPTOGNATHUS BREVIS Dum. Bibr., Erp. Gén., vii, p. 476.
"Mexico." Unknown to me.

TOGNATHUS FASCIATA Günther, Cope, loc. cit., 1868, p. 137; *Tropidodipsas fasciata* Günther, Catal. Brit. Mus., 1858; *Leptognathus dumerili* Jan, Elenco Sistematico, 1863.

ierra caliente, Jicaltepec, Vera Cruz, *Comision Geográfica.*

TOGNATHUS SARTORII Cope, loc. cit., 1868, 137; *Tropidodipsas sartorii* Cope, loc. cit., 1863, p. 100; *Leptognathus sexscutatus* Bocourt, Bull. Soc. Philomath. Paris, March, 1884; ? *L. leucostomus* Bocourt, loc. cit.

'era Cruz, *Sartorius;* W. Guatemala, *Bocourt.*

TOGNATHUS LEUCOSTOMUS Bocourt, Bull. de la Soc. Philomath. Paris, March, 1884, sep., p. 7.

'ucatan, *Bocourt.*

Mesopeltis Cope.

c. Acad. Phila., 1866, p. 318; *Asthenognathus* Bocourt, Bull. Soc. Philomath. Paris, March, 1884.

SOPELTIS SANNIOLUS Cope, Proc. Acad. Phila., 1866, p. 318.

'ucatan, *Schott.*

SOPELTIS MULTIFASCIATUS Jan, M. S.; Cope, Proc. Amer. Philos. Soc., 1884, p. 172; *Leptognathus* Bocourt, Bull. Soc. Philomath. Paris, 1884, March; *Asthenognathus* Bocourt, loc. cit

'era Paz, *Morelet.*

Sibon Fitzinger.

ne Class. Rept., 1826, p. 60; *Leptodira* Günther, Catal. Brit. Mus., 1858, 165.

ON PACIFICUM Cope; *Leptodira pacifica* Cope, Proc. Acad. Phila., 1868, p. 310.

Mazatlan, *Bischoff.*

ON MYSTACINUM Cope; *Leptodira mystacina* Cope, Proc. Amer. Philos. Soc., 1869, p. 151.

Nicaragua, *MacNiel;* West Tehuantepec, *Sumichrast.*

ON FRENATUM Cope, Proceds. U. S. Nat. Museum, 1886, p. 184.

Jalapa, *Comision Geografica.*

ON RHOMBIFERUM Günther; *Leptodira rhombifera* Günther, Ann. and Mag. Nat. Hist., 1872, p. 32.

Guatemala, *Günther.*

ON NIGROFASCIATUM Günther; *Leptodira nigrofasciata* Günther, Ann. and Mag. Nat. Hist., 1868, p. 425.

Nicaragua, *Sceman.*

N PERSONATUM Cope; *Leptodira personata* Cope, Proc. Acad. Phila., 1868, p. 310, Mazatlan, W. Mexico, *Bischoff.*

N ANNULATUM Linn; *Dipsas* Schl..; *Leptodira* Günther.

Subspecies ANNULATUM Linn.; *Dipsas* et *Leptodira annulata* Auctorum, Cope Journ. Acad. Phila., 1875, p. 157.

Harbor, Costa Rica, *Gabb.*

Subspecies YUCATANENSIS Cope, Proc. Acad. Phila., 1866, p. 127.

Yucatan, *Schott.*

Subspecies SEPTENTRIONALE Kenn.; *Dipsas septentrionalis* Kennicott, U. S. Mex. Bound., Surv. Reptiles, Plate; vide Günther, Catal. Colubr. Snakes Brit. Mus., 1858, p. 166.

Panama, *Bransford;* Belize, *Parsons;* Yucatan, *Schott;* Guatemala, *Hague;* Tehuantepec, *Sumichrast;* Colima, *Xantus;* Zacualtipan Hidalgo *Cope;* Orizava, *Sumichrast;* Mirador, *Sartorius;* Tuxpan, *Lincecum;* Guadalajara, *Major.*

Trimorphodon Cope.

Proc. Acad. Phila., 1861, p. 297.

TRIMORPHODON BISCUTATUS Dum. et Bibr., Cope, Proc. Amer. Philos. Soc., 1886, p. 153; *Dipsas biscutatus* Dum. et Bibr., Erp. Gén., vii, p. 1153; *Dipsadomorphus* Günther; *Trimorphodon major*, Cope, Proc. Amer. Philos. Soc., 1886, p. 153.
Realejo, Nicaragua, *Dow;* Guadalaxara, *Major;* W. Tehuantepec, *Sumichrast;* Coban, *Hague;* Colima, *Xantus.*

TRIMORPHODON LYROPHANES Cope, Proc. Acad. Phila., 1860, p. 343.
Cape St. Lucas, *Xantus.*

TRIMORPHODON WILKINSONII Cope, Proc. Amer. Philos. Soc., 1886, p. 285.
City of Chihuahua, *Wilkinson.*

TRIMORPHODON LAMBDA Cope, Proc. Amer. Philos. Soc., 1886, p. 286 (November, 1885).
Guaymas, *Emerick.*

TRIMORPHODON COLLARIS Cope, Journ. Acad. Phila., 1875, p. 131.
Orizaba, Vera Cruz, *Sumichrast.*

TRIMORPHODON UPSILON Cope, Proc. Amer. Philos. Soc., 1869, p. 152.
Guadalaxara, W. Mexico, *Major;* Batopilas, Chihuahua, *Wilkinson;* Guanajuato, *Dugés;* Zacualtipan, *Bernad.*

TRIMORPHODON TAU Cope, loc. cit., 1869, p. 152.
Tehuantepec, *Sumichrast.*

Dipsas Boie.

Isis, 1827, 549; Günther, Catal., 1858, 317; *Himantodes* Dum. et Bibr., Erp. Gén., vii, 1065.

DIPSAS LEUCOMELAS Cope; *Himantodes leucomelas* Cope, Proc. Acad. Phila., 1861, p. 296.
Vera Cruz, *Sartorius.*

DIPSAS CENCHOA Linn., Günther, Catal., 174; Cope, Journ. Acad. Phila., 1875, p. 131; *Himantodes cenchoa* Dum. Bibr.
Darien, *Selfridge;* Costa Rica, *Gabb;* Central Mexico, *Sartorius;* San José Acatepec, Vera Cruz, *Comision Geográfica.*

DIPSAS GEMMISTRATA Cope, Jour. Acad. Phila., 1875, p. 131; *Himantodes gemmistratus* Cope, Proc. Acad. Phila., 1861, p. 296.
San Salvador, *Dow;* Costa Rica, *Van Patten;* W. side of Tehuantepec, *Sumichrast.*
Var. v. subspecies LATISTRATA Cope. The very numerous dorsal spots extend entirely across the back and sides.
Valley of Toluca, *Vasquez;* Guadalajara, *Major.*

DIPSAS TENUISSIMA Cope; *Himantodes tenuissimus* Cope, loc. cit., 1866, 317.
Yucatan, *Schott.*

Dryophis Fitzinger.

Neue Class., 1826, p. 66; Günther, Catal., p. 158.

DRYOPHIS ACUMINATUS Wied.; Günther, Catal., p. 156; Dum. et Bibr., Erp. Gén., vii, p. 819; Cope, Journ. Acad. Phila., 1875, p. 132; *Oxybelis acuminatus* Dum. et Bibr.
Panama, *Gallaer;* Veraguas, *Mitchell;* Costa Rica, *Van Patten, Gabb;* Nicaragua, *MacNiel, Bransford;* Tehuantepec (E.), *Streets;* (W.), *Sumichrast;* Tobasco, *Berendt;* Guaymas, *Stone;* San Salvador, *Dow;* Tuxpan, *Linecum;* Coatzacoalcos River, *Streets.*

DRYOPHIS BREVIROSTRIS Cope, Proc. Acad. Phila., 1860, p. 555; Journ. Acad. Nat. Sci. Phila., 1875, pl. xxvi, fig. 2.
a, *Mitchell;* Costa Rica, *Van Patten, Gabb.*

FULGIDUS Daudin; Günther, Catal., p. 158.
Leconte; San Salvador, *Dow;* Tehuantepec, *Sumichrast.*

Philothamnus Smith.

Rhamnophis Günther.

PHILOTHAMNUS ÆRUGINOSUS Cope; *Leptophis æruginosus* Cope, Journ. Acad. Phila., 1875, p. 132, pl. xxviii, fig. 9.
Costa Rica, *Gabb.*

PHILOTHAMNUS MODESTUS Günther; *Ahætulla modesta* Günther, Ann. and Mag. Nat. Hist., 1872, p. 26.
Guatemala, *Günther.*

PHILOTHAMNUS DEPRESSIROSTRIS Cope, Proc. Acad. Phila., 1860, p. 557.
Coeuyas de Veragnas, *Mitchell.*

Hapsidophrys Fischer.

HAPSIDOPHRYS MEXICANUS Dum. et Bibr., Cope, Proc. Amer. Philos. Soc., 1885, p. 382; *Leptophis mexicanus* Dum. et Bibr. Erp. Gén., vii, 536; *Ahætulla mexicana* Günther, Catal., 1858, p. 154; Cope, Journ. Acad. Phila., 1875, p. 133.
Costa Rica (valley), *Van Patten;* Nicaragua, *Bransford, MacNiel;* Honduras, *Leconte;* Yucatan, *Schott;* Belize, *Parsons;* Northern Mexico, Vera Cruz, *Sumichrast, Mision Geográfica.*

HAPSIDOPHRYS DIPLOTROPIS Günther; *Ahætulla diplotropis* Günther, Ann. and Mag. Nat. Hist., 1872, p. 25.
Tehuantepec, *Sumichrast.*

HAPSIDOPHRYS SATURATUS Cope; *Leptophis saturatus* Cope, Journ. Acad. Phila., 1875, p. 133, pl. xxviii, fig. 10.
Costa Rica, *Gabb;* Nicaragua, *Bransford.*

Leptophis Bell.

Zool. Journ. 1825, pt., Dum. et Bibr., 1853; *Thrasops* Hallowell, Proc. Acad. Phila. 1857; *Ahætulla* Günther, Catal., 1858, p. 151; not of Gray, 1825.

LEPTOPHIS BILINEATUS Günther; *Diplotropis bilineatus* Günther, Ann. and Mag. Nat. Hist., 1872, p. 25.
Nicaragua, *Bransford;* Tehuantepec, *Sumichrast.*

LEPTOPHIS OCCIDENTALIS Günther; *Ahætulla occidentalis* Günther, Proc. Zool. Soc. London, 1859, p. 412.
Darien, *Selfridge;* Panama, *Leconte.*

LEPTOPHIS SARGII Fischer, Archiv. f. Naturgesch., xlvii, 1881 (separate, p. 7), pl. xi, figs. 7–9.
Coban, *Sarg.*

LEPTOPHIS PRÆSTANS Cope, Journ. Acad. Phila., 1875, p. 133; *Thrasops præstans* Cope, Journ. Acad. Phila., 1868, p. 309.
E. Costa Rica, *Gabb;* Guatemala, *Hague.*

Drymobius Cope.

Proc. Acad. Phila., 1860, p. 560; Proc. Amer. Philos. Soc., 1877, p. 19; *Dendrophidium* Cope, Proc. Acad. Phila., 1860, p. 561; *Coluber* Wagler, Nat. Syst. Amphib., 1830, p. 179; Duméril, Prodrome, 1853, 59 partim; nec Laurentii.

DRYMOBIUS CHLOROTICUS Cope; *Dendrophidium chloroticum* Cope, Proc. Amer. Philos. Soc., 1886, p. 278.
Coban, Guatemala, *Hague.*

DRYMOBIUS DENDROPHIS Schleg.; *Herpetodryas dendrophis* Schlegel, Essai sur la Physionomie des serpents, ii, p. 197, Dum. et Bibr., vii, 208; *H. poitei* Dum. et Bibr.; *H. nuchalis* Peters, fide Günther; *Dendrophidium dendrophis* Cope, Proc. Acad. Phila., 1860, p. 561.

Guiana, Auctorum citatorum; Nicaragua, *Bransford.*

DRYMOBIUS ALTERNATUS Bocourt; *Coryphodon alternatus* Bocourt, Bull. Soc. Philomath. Paris, March, 1884.

Darien, *Viguier.*

DRYMOBIUS BODDÆRTII Seetzen; Cope, loc. cit., 1860, 561, Journ. Acad. Phila., 1875, p. 135; *Herpetodryas boddærtii* Dum. et Bibr., vii, p. 210, Günther.

Panama, *Nelson;* Veragua, *Mitchell;* Costa Rica, *Van Patten, Gabb;* Nicaragua, *Moser, MacNiel;* Jalapa, *Montes-DeOca;* Tuxpan, *Lincecum;* Actopam, *Comision Geografica.*

DRYMOBIUS MELANOLOMUS Cope, Proc. Acad. Phil., 1868, 134; *Masticophis bilineatus* Schlegel, Cope, loc. cit., 1866, p. 127, nec Schlegelii.

Yucatan, *Schott.*

DRYMOBIUS BILINEATUS Schlegel; *Herpetodryas bilineatus* Schlegel, Jan. Elenco Systematico, p. 81; Icono. Gén., tab.

"Mexico," *Jan.*

DRYMOBIUS PULCHERRIMUS Cope, Proc. Acad. Phila., 1874, p. 65.

Western Central America, *Davidson;* West Nicaragua, *Flint.*

DRYMOBIUS LÆVIS Fischer; *Herpetodryas lævis* Fisch., Archiv f. Naturgeschichte, 1881, pl. xi, figs. 4–6.

Coban, *Sarg.*

DRYMOBIUS MARGARITIFERUS Schlegel, Cope, Proc. Amer. Philos. Soc., 1877, p. 19; *Herpetodryas margaritiferus* Schlegel, Essai s. Phys. Serpents, ii, p. 184; *Dromicus* Günther; *Masticophis* Cope.

Panama, *Leconte;* Costa Rica, *Gabb;* Belize, *Parsons;* Guatemala, *Hague, Van Patten, Berendt;* Tehuantepec, *Sumichrast* (West) *Streets* (East); Tobasco, *Berendt;* Table land of Mexico, *Sartorius;* Colima, *Xantus;* Tuxpan, *Lincecum;* Misantla, San José, Vera Cruz, *Comision Geográfica;* Coatzacoalcas, R., *Streets;* Zacualtipan, *Bernad.*

Herpetodryas Boie.

Isis, 1827; Cope, Proc. Acad. Phila., 1860, p. 563.

HERPETODRYAS CARINATUS Linn., Dum. Bibr., vii, p. 207; Cope, Journ. Acad. Phila., 1875, p. 135.

Low country of E. Costa Rica, *Gabb;* San José, *Van Patten, Zeledon;* Darien, *Selfridge.*

HERPETODRYAS FUSCUS Duméril et Bibron, Erp. Gén., vii, p. 209.

Darien, *Selfridge.*

HERPETODRYAS MELAS Cope, Proc. Amer. Philos. Soc., 1885, November, 1885, p. [illegible]

Nicaragua, *Bransford.*

HERPETODRYAS GRANDISQUAMIS Peters; *Spilotes grandisquamis* Pet., Monatsber. Akad. Preuss., 1868, p. 451; *H. grandisquamis* Cope, Journ. Acad. Phila., 1875, p. 135.

Costa Rica, *Gabb.*

Bascanium Baird and Girard.

Catal. Serp. N. A., 1853, p. 93; *Coryphodon* Dum. et Bibr., Erp. Gén., vii. Oweni; *Coluber* Dum., Prodrome, 1853, p. 59, partim; Garman; *Masticophis* Baird and Girard, Catal. Serp. N. A., 1853, p. 98.

BASCANIUM MENTOVARIUM Dum. et Bibr.; *Coryphodon mentovarium* Dum. et Bibr., Erp. Gén., vii, p. 187; *B. suboculare* Cope, Proc. Acad. Phila., 1866, p. 319.
Guatemala, *Hague;* Tehuantepec, *Sumichrast;* Colima, *Xantus.*

BASCANIUM FLAGELLIFORME Cateab.
Subspecies TESTACEUM Say; Baird and Girard, Catal., pp. 99, 150.
Lower California, *Xantus;* Guadalaxara, *Major;* City of Chihuahua, *Wilkinson.*

BASCANIUM AURIGULUM Cope, Proc. Acad. Phila., 1861, p. 301.
Cape St. Lucas, Lower California, *Xantus.*

BASCANIUM TÆNIATUM Hallowell; Cope, Check-list Batr. Rept., N. Amer.; *Leptophis tæniata* Hallowell, Proc. Acad. Phila., vi, 1862, p. 181.
Subspecies LATERALE Hallowell; *Leptophis lateralis* Hallowell, Proc. Acad. Phila., 1853, U. S. Pac. R. R. Surv. and Williamson's Report, Rept., p. 13, pl. iv, fig. 3.
Guanajuato, *Dugés;* City of Chihuahua, *Wilkinson.*

Elaphis Aldrov.

Günth. emend. Catal. Brit. Mus., 1858, p. 92.

ELAPHIS MELANOTROPIS Cope; *Dendrophidium melanotropis* Cope, Journal Acad. Phila., 1875, p. 134, pl. xxxi. fig. 7.
E. Costa Rica, *Gabb.*

Natrix Laurenti.

Specimen Synopsis Reptilium 1768, p. 63; Cope emend., Proc. Acad. Phila., 1862, p. 338; *Calopeltis* Bonap. Mem. Real. Acad. Sci. Torin. (2) II, 431, 1840; *Coluber* Günther, Catal. Brit. Mus., 1858, 87; *Scotophis* Baird and Girard, Catal. Serp. N. Amer., 1853, p. 73.

NATRIX EMORYI Bd. Gird.; *Coluber emoryi* Baird and Girard, Cope, Check-list Batr. Rept. N. Amer., 1875, p. 39; Proc. Amer. Philos. Soc., 1885, p. 284; *Scotophis emoryi* Baird and Girard, Catal. Rept. N. Amer., i, Serpents, p. 157.
City of Chihuahua, *Wilkinson.*

NATRIX FLAVIRUFUS Cope; *Coluber flavirufus*, Proc. Acad. Phila., 1866, p. 319.
Yucatan, *Schott;* Tobasco, *Berendt;* Mirador, Vera Cruz, *Sartorius;* Chiapas, *Montes-de-Oca.*

NATRIX MUTABILIS Cope; *Coluber mutabilis* Cope, Proc. Amer. Philos. Soc., 1884, p. 175.
Costa Rica, *Zeledon;* Vera Paz, *Hague;* Central Tehuantepec, *Sumichrast;* Guanajuato, *Dugés.*

NATRIX TRIASPIS Cope; *Coluber triaspis*, Proc. Acad. Phila., 1866, p. 128.
Belize, *Parsons.*

Spilotes Wagler.

Nat. Syst. Amphib., 1830, p. 179. *Georgia* Baird and Gird., 1853.

SPILOTES LUNULATUS Cope; *Tropidodipsas lunulatus* Cope, Proc. Acad. Phila., 1860, p. 517; *Phrynonax lunulatus* Cope, loc. cit., 1862, p. 348.
Honduras, *Rüse;* Orizaba, *Sumichrast.*

SPILOTES CHRYSOBRONCHUS Cope, Journ. Acad. Phila., 1875, p. 136, pl. xxviii, fig. 11, Costa Rica, *Gabb.*

SPILOTES PŒCILONOTUS Günther, Catal., p. 100.
"Hondurus," *Günther;* Orizava, *Sumichrast.*

SPILOTES AURIBUNDUS Cope; *S. pullatus auribundus* Cope, Proc. Acad. Phila., 1861, p. 300; *S. salvinii* Gthr., Ann. and Mag. Nat. Hist., 1862, Jan.
Nicaragua, *MacNiel;* Yucatan, *Schott;* Vera Cruz, *Sartorius.*

SPILOTES PULLATUS Linn.; *S. variabilis* Wied., Dum. et Bibr., vii, p. 220; *S. pullatus* Cope, Journ. Acad. Phila., 1875, p. 135.
Darien, *Selfridge;* Nicaragua, *Bransford;* Costa Rica, *Gabb.*

SPILOTES CORAIS Cuvier; *Coluber corais* Cuvier; *Spilotes corais* Dum. Bibr., vii, p. 223; Günther, Catal., 1858, p. 98; Cope, Journ. Acad. Phila., 1875, p. 157.

Subspecies MELANURUS Dum. et Bibr.; *Spilotes melanurus* Dum. et Bibr., vii, 224.

Panama, *Braneford;* San José and Talamanca, Costa Rica, *Gabb;* W. Tehuantepec, *Sumichrast;* Yucatan, *Schott;* Tuxpan, *Linecoum;* Colima, *Xantus;* Vera Cruz (Mirador), *Sartorius;* Belize, ?

Subspecies EREBENNUS Cope, Journ. Acad. Phila., 1875, p. 135; *Spilotes erebennus* Cope, Proc. Acad. Phila., 1860, p. 564.

Guanajuato, *Dugés;* Jalapa, *Comision Geográfica.*

SPILOTES DEPPEI Dum. Bibr.; *Elaphis deppei* Dum. et Bibr., vii, 268; *Arizona jani* Cope, Proc. Acad. Phila., 1860, p. 369; *Pityophis deppei* Jan.

Buena Vista, *Couch;* Guanajuato, *Dugés;* San José Acateno, Vera Cruz, *Comision Geográfica.*

SPILOTES LINEATICOLLIS Cope; *Arizona lineaticollis* Cope, loc. cit., 1861, p. 300.

Southern Mexican Plateau, *Sartorius.*

Rhinechis Micahelles.

Dum. Bibr. Erp. Gén., vii, p. 227; Günther, Catal. Brit. Mus., 1868, p. 85; *Arizona* Kennicott, U. S. Mex. Bound. Surv., ii, Reptiles, p. 18, 1859.

RHINECHIS ELEGANS Kennicott; Cope, Proc. Amer. Philos. Soc., 1885, p. 284; *Arizona elegans* Kenn., loc. cit., p. 18, pl. 13; *Pityophis elegans* Cope, Check-list Batr. Rept. N. Amer., p. 39.

City of Chihuahua, *Wilkinson.*

Pityophis Holbrook.

N. Amer. Herp., 1842, iv, p. 7; Cope, Check-list Batr. Rept. N. Amer., 1859.

PITYOPHIS VERTEBRALIS Blainville, Cope, Check-list Batr. Rept. N. Amer., 1875, 39; *P. hæmatois* Cope, Proc. Acad. Phila., 1860, p. 342.

Cape St. Lucas, Lower California, *Xantus.*

PITYOPHIS SAYI Schleg.

Subspecies MEXICANUS; *Pityophis mexicanus* Dum. et Bibr., vii, p. 236.

Colima, *Xantus;* City of Chihuahua, *Wilkinson.*

Salvadora Baird and Girard.*

Catal. Serp. N. Amer., 1853, p. 104, nec. Linnæi; hinc *Phimothyra* Cope, Proc. Acad. Phila., 1860, 566.

SALVADORA MEXICANA Dum. et Bibr.; Günther, Am. Mag. Nat. Hist. 1863, xii, 349. *Zamenis mexicanus* Dum. et Bibr., Erp. Gén., vii, p. 695; *Lytorhynchus mexicanus* Cope, Proc. Amer. Philos. Soc., 1879, 266.

Colima, *Xantus.*

SALVADORA BAIRDII Jan; *Salvadora bairdii* Jan, Iconografia degli Ofidi., tab. iii, fig. 2; *Phimothyra bairdi* Cope.

Jalapa, *Pease;* Guanajuato, *Dugés;* Orizaba and W. Tehuantepec, *Sumichrast;* S. of Chihuahua, *Potts.*

SALVADORA GRAHAMLE Baird and Girard, Catal., p. 104; *Phimothyra grahamiæ* Cope.

Lower California, *Xantus;* Guaymas, *Cragin;* Batopilas, and Chihuahua, *Wilkinson.*

SALVADORA DECURTATA Cope; *Phimothyra decurtata* Cope, Proc. Acad. Phila., 1868, p. 310.

Lower California, *Xantus, Belding.*

* The name Salvadora was given by Linnæus to a genus of plants, hence I gave the present genus another name, as above cited. However, I think that while duplication of names in zoology is inadmissible, it is not necessary to require that names used in the vegetable kingdom should always differ from those given to animals. I therefore now use the name of Baird and Girard.

Symphimus Cope.

Proc. Amer. Philos. Soc., 1869, p. 150.

SYMPHIMUS LEUCOSTOMUS Cope, loc. cit., 1869, p. 150.
Tehuantepec, *Sumichrast.*

Helicops Wagler.

Dum. Bibr., Erp. Gén.

HELICOPS BIFRENATUS Bocourt, Bulict. Soc. Philomath. Paris, 1884, March.
Darien, Aspinwall, *Tombe.*

Tropidonotus Kuhl.

Isis von Oken, 1826, 205; *Nerodia*, Baird and Girard, Catal.

TROPIDONOTUS RHOMBIFER Hallowell; Cope, Check-List Batr. Rept. N. Amer., p. 43; *Nerodia holbrookii* Bd. Gird. Catal.
Misantla, Vera Cruz, *Comision Geográfica Exploradora.*

Eutænia Baird and Girard.

Catal., p. 24; *Thamnophis* Fitz. (nomen nudum), Cope.

EUTÆNIA MELANOGASTER Wiegmann, Cope, Proc. Amer. Philos. Soc., 1885, p. 386; *Tropidonotus melanogaster* Peters, Monatsber. Preuss. Akad., 1864, p. 389.
Guanajuato, *Dugés;* City of Mexico, *Cope.*

EUTÆNIA MULTIMACULATA Cope, Proc. Amer. Philos. Soc., November, 1885, 1886, p. 284; *Atomarchus multimaculatus* Cope, American Naturalist, 1883, p. 1300.
City of Chihuahua, *Wilkinson.*

EUTÆNIA PHENAX Cope, Proced. Acad. Phila., 1868, p. 134.
Cordova, Vera Cruz, *Sumichrast, Dugés.*

EUTÆNIA SCALARIS Cope; *Thamnophis scalaris* Cope, loc. cit., 1860, 369.
Jalapa, *Montes de Oca, Flohr;* Orizaba, *Sumichrast, Dugés;* Tezintlan, Puebla, and San José Acateno, Vera Cruz, *Comision Geográfica Exploradora.*

EUTÆNIA SUMICHRASTI Cope, loc. cit., 1866, 306; Proceeds. Amer. Philos. Soc., 1884, p. 174.
Orizaba, *Sumichrast;* Zacualtipan, Hidalgo, *Bernad.*

EUTÆNIA CHRYSOCEPHALA Cope, Proc. Amer. Philos. Soc., 1884, p. 173.
Orizaba, Vera Cruz, *Sumichrast.*

EUTÆNIA CYRTOPSIS Kenn., Proc. Acad. Phila., 1860, p. 333.
Rinconada, Coahuila, *Couch;* Durango, *Couch;* Gila River, *Webb;* Guaymas, *Cragin;* Lower California, *Xantus;* City of Chihuahua, *Wilkinson.*

EUTÆNIA COLLARIS Jan, Iconographie Générale des Ophidiens, livr. 25, pl. 5, fig. 2; *Eutænia cyrtopsis* Kenn., Cope, Proc. Amer. Philos. Soc., 1879, p. 266.
Guanajuato, *Dugés;* Orizaba, *Sumichrast;* Toluca, *Vasquez;* Guatemala, *Van Patten;* Zacualtipan, *Bernad.*
Perhaps the same as *E. cyrtopsis.*

EUTÆNIA PULCHRILATUS Cope, Proc. Amer. Phil. Soc., 1884, p. 174.
? Guanajuato, *Dugés;* Mexico, *Hoege;* Zacualtipan, Hidalgo, *Bernad;* Puebla, *Comision Geográfica.*

EUTÆNIA INSIGNIARUM Cope, Proc. Amer. Philos. Soc., 1884, p. 172.
Valley of Mexico, *Cope, Herrera;* Guanajuato, *Dugés.*

EUTÆNIA FLAVILABRIS* Cope, Proc. Acad. Phila., 1866, p. 306; Proc. Amer. Philos. Soc., 1884, p. 173.
Vera Cruz, *Sartorius;* Guanajuato, *Dugés;* Mexico or Toluca, *Hoege;* Acateno, Vera Cruz, *Comision Geográfica.*

* This species is very near to the next, possibly identical.

XENIA LABIOSA Bocourt; *Streptophorus labiosus* Bocourt, Miss. Sci. au Mexique, 550 pl. xxxii, fig. 6.
Guatemala, *Bocourt.*

Chersodromus Reinhardt.

Vidensk. Medd. Naturhist. For. Kjobnhavn, 1860, p. 242; *Opisthodon* Peters, Monatsber. Berl. Akad. Wiss., 1861, p. 460.

CHERSODROMUS LIEBMANNII Reinhardt, loc. cit., p. 243; *Opisthodon torquatus* Peters, loc. cit.
Vera Cruz, *Sartorius;* Huanusco, *Peters.*

CHERSODROMUS NIGRICANS Kroyer, loc. cit., 245.
"Mexico."

Tropidoclonium Cope.

Proc. Acad. Phila., 1860, p. 76; *Microps* Hallowell, 1856, nec., p. 265, Megerlei.

TROPIDOCLONIUM STORERIOIDES Cope, loc. cit., 1865, p. 190.
Plateau, Southern Mountains, *Sartorius.*

Adelophis Dugés.

Proc. Amer. Philos. Soc., 1879; p. 265.

ADELOPHIS COPEI Dugés, Proc. Amer. Philos. Soc., 1879, p. 266; *Storeria copei* Garman, Serpents of N. America, in Memoirs Mus. Comp. Zoölogy, Cambridge, 1883.
Guadalaxara, *Dugés.*

Storeria Baird and Girard.

Ischnognathus Dum. Bibr., Erp. Gén.

STORERIA DEKAYI Holbrook; Baird and Girard, Catal., 135.
Guanajuato, *Dugés;* Jicaltepec, Vera Cruz, *Comision Geográfica.*

STORERIA TROPICA Cope, Proc. Amer. Philos. Soc., 1884, p. 175.
Vera Paz, *Hague.*

STORERIA OCCIPITOMACULATA Storer; Baird and Girard, Catal., p. 137.
Zacualtipan, Hidalgo, *Bernad.*

Amastridium Cope.

Proc. Acad. Phila., 1860, p. 370.

AMASTRIDIUM VELIFERUM Cope, loc. cit.
Veraguas, *Mitchill.*

Hydrocalamus Cope.

Proc. Amer. Phil. Soc., 1884, p. 176.

HYDROCALAMUS QUINQUEVITTATUS Dum. Bibr.; Cope, Proc. Amer. Philos. Soc., 1884, p. 176; *Homalopsis quinquevittatus* Dum. Bibr., Erp. Gén., vii, p. 975; *Calopisma quinquevittatus* Jan, Elenco, p. 75; *Hydrops lubricus* Cope, Proc. Acad. Phila., 1871, p. 217.
E. Tehuantepec, *Streets;* Vera Paz, *Dum. Bibr.*

Limnophis Günther.

Ann. Mag. Nat. Hist., 1865, February.

LIMNOPHIS SEPTEMVITTATUS Fischer; Cope, Proc. Amer. Philos. Soc., 1884, p. 177 *Calopisma septemvittata* Fischer, Verhand. Nat.-wiss. Verein, Hamburg, 1879, p. 84, pl. i, fig 3.
"Mexico," *Fischer.*

Hydromorphus Peters.

Monatsber. K. Preuss. Akad., 1859, p. 276.

HYDROMORPHUS CONCOLOR Peters, loc. cit., 277.
Costa Rica, *Hoffmann*.

Scytale Boie.

Dum. Bibr., Günther.

SCYTALE CORONATUM Schneider, Dum. Bibr., vii, 999.
Subspecies CORONATUM Dum. Bibr.
Panama, *Sternberg*.

Oxyrrhopus Wagler.

Nat. Syst. Amphib., 1830, p. 185; Idem et *Brachyrhyton* Dum. Bibr. Erp. Gén., vii, p. 1008.

OXYRRHOPUS DOLIATUS Dum. Bibr., Erp. Gén., vii, p. 1020; *Oxyrrhopus petolarius* Linn, Cope, Journ. Acad. Phila., 1875, p. 132 (not of Dum. Bibr.).
Subspecies SEMICINCTUS Cope; the bands not extending on the belly.
East Costa Rica, *Gabb*.

OXYRRHOPUS OCCIPITOLUTEUS Dum. Bibr., vii, p. 1009.
Darien, *Selfridge*.

OXYRRHOPUS CLELIA Linn.; *Brachyrhyton clelia* Dum. Bibr.; *Scolecophis scytalinus* Cope, Proc. Acad. Phila., 1866, p. 320.
Panama, *Gallaer*; Veraguas, *Mitchell*; Tehuantepec, *Sumichrast*; Yucatan, *Schott*; Darien, *Selfridge*.

OXYRRHOPUS PLUMBEUS Wied; Günther, Catal. Col. Snakes in Brit. Mus., 1858, p. 189; Cope, Journ. Acad. Phila., 1875, p. 131; *Brachyrhyton plumbeum* Dum. Bibr. Erp. Gén., viii.
Costa Rica, *Gabb*; Tehuantepec, *Streets*.

Xenodon Boie.

Isis von Oken, 1827.

XENODON ANGUSTIROSTRIS Peters, Monatsber. Preuss. Akad., 1864, p. 390; Cope, Journ. Acad. Phila., 1875, pp. 107–141.
Panama, *Leconte*; Costa Rica, *Gabb*; Panama, *Bransford*; Guatemala, *Hague*.

Tomodon Dum. et Bibr.

Erp. Gén., vii, p. 932.

TOMODON STRIGATUS Günther, Catal. Col. Brit. Mus., 1858, p. 52.
Nicaragua, *Günther*.

Manolepis Cope.

Proc. Amer. Philos. Soc., 1884, p. 176.

MANOLEPIS NASUTUS Cope, Proc. Amer. Philos. Soc., 1884, p. 176; *Tomodon nasutus* Cope, Proc. Acad. Phila., 1864, p. 166; Sumichrast, Arch. del. Science Bibl. Univers. 1872, 262; Bocourt, Journal de Zoologie 1876, p. 24.
Pacific coast at Tehuantepec, *Sumichrast*; Colima *Xantus*.

Conophis Peters.

Monatsber. K. Akad. Berlin, 1860, p. 521.

CONOPHIS Peters, Monatsber. Akad. Preuss., 1860, p. 519.
Guate

NOPHIS SUMICHRASTI Cope, Journ. Acad. Phila., 1875, p. 137.
Subspecies SUMICHRASTII Cope, loc. cit.
Guadalaxara, *Major;* W. Tehuantepec, *Sumichrast.*
Subspecies VIDUUS Cope, loc. cit.
W. Tehuantepec, *Sumichrast.*

NOPHIS CONCOLOR Cope, Proc. Acad. Phila., 1866, p. 318; Journ. Acad. Phila., 1875, p. 137.
Yucatan, *Schott.*

NOPHIS PULCHER Cope, Proc. Acad. Phila., 1868, p. 308; Journ. Acad. Phila., 1875, p. 137.
Vera Paz, *Hague;* Chiapas, *Montes de Oca.*

NOPHIS LINEATUS Dum. et Bibr.; *Tomodon lineatus* Dum. et Bibr., Erp. Gén., vii, 936; *Conophis lineatus* Cope, Proc. Acad. Phila., 1871, p. 204; Journ. Acad. Phila., 1875, p. 137.
San José, Costa Rica, *Van Patten;* Nicaragua, *MacNiel.*

Erythrolamprus Boie.

von Oken, 1826, p. 981; *Coniophanes* Hallowell, Proc. Acad. Phila., 1860, p. 484; Cope, loc. cit., 1860, p. 248; *Glaphyrophis* Jan, 1863, Elenco Syst. Ophid., p. 54.

YTHROLAMPRUS PICEIVITTIS Cope; *Coniophanes piceivittis* Cope, Proc. Amer. Philos. Soc., 1869, p. 149; *Tachymenis taniata* Peters, Monats. Preuss. Akad., 1869, p. 876; *T. piceivittis* Günther, Ann. and Mag. Nat. Hist.
Chihuitan, Western Tehuantepec, *Sumichrast.*

YTHROLAMPRUS IMPERIALIS Baird, Girard; *Coniophanes imperialis* Cope, Proc. Acad. Phil., 1861, p. 74; *Tæniophis imperialis* Baird and Girard, U. S. & Mex. Bound. Surv., ii, Rept., 23, tab. 19, fig. 1; *Rhadinæa imperialis* Cope, *lapsu calami*, Proc. Amer. Philos. Soc., 1885, p. 382.
Tuxpan, *Lincecum;* Jicaltepec, Vera Cruz, *Mision Geográfica.*

YTHROLAMPRUS PROTEROPS Cope; *Coniophanes proterops* Cope, Proc. Acad. Phila., 1860, 249; *Glaphyrophis lateralis* Jan, Elenco Sist. degli. Ophid. and Archiva, p. I. Zoologia, 1863, p. 94.
Coban, Guatemala, *Hague;* Tehuantepec, *Sumichrast;* Jalapa, *Montes de Oca;* Orizaba, *Sumichrast.*

YTHROLAMPRUS FISSIDENS Günther; *Coronella fissidens* Günther, Catal. Brit. Mus., 1858, p. 36; *Coniophanes fissidens* Cope, loc. cit., 1860, p. 248; Journ. Acad. Phila., 1875, p. 137.
Costa Rica, *Gabb;* Western Tehuantepec, *Spear, Sumichrast;* Miraflor, Vera Cruz, *Sartorius;* Orizaba, *Sumichrast;* Coatzacoalcos, R., *Streets;* Arroyo del Potrero, Vera Cruz, *Comision Geográfica.*

YTHROLAMPRUS VIOLACEUS Hallowell; *Coniophanes violaceus* Hallowell, Proc. Acad. Phila., 1860, p. 484.
Nicaragua, *Stimpson.*

YTHROLAMPRUS BIPUNCTATUS Günther; *Coronella bipunctata* Günther, Catal., p. 36; *Coniophanes bipunctatus* Cope, Proc. Acad. Phila., 1866, p. 128; *Glaphyrophis pictus* Jan, Arch. p. Zoologia, 1863, p. 95.
Belize, *Parsons;* Orizaba, Vera Cruz, and W. Tehuantepec, *Sumichrast;* Guatemala, *Hague.*

RYTHROLAMPRUS PUNCTIGULARIS Cope; *Coniophanes punctigularis* Cope, loc. cit., 1860, p. 248; *Dromicus chitalonensis* Müller, Anmerkungen über Herp. Saml. Basel, p. 29.
Honduras, *Gallaër;* Guatemala, *Bernouilli;* Chiapas, *Montes de Oca.*

ERYTHROLAMPRUS MELANOCEPHALUS Peters, Monatsb. Preuss. Akad., 1869, p. 876.
"Mexico," *Peters.*

ERYTHROLAMPRUS LATERITIUS Cope; *Coniophanes lateritius* Cope, Proc. Acad. Phila., 1861, p. 524.
Guadalaxara, *Major.*

ERYTHROLAMPRUS VENUSTISSIMUS Schlegel; *Coronella venustissima* Schlegel, Essai, ii, p. 53; *Erythrolamprus venustissimus* Dum. et Bibr., Erp. Gén., viii, p. 581, pl. 74; Cope, Journ. Acad. Phila., 1875, p. 141.
Costa Rica, *Gabb, Van Patten.*

Hypsiglena Cope.

Proc. Acad. Phila., 1860 (June), p. 240; *Pseudodipsas* Peters, Monatsb. Preuss. Akad. 1860, p. 52 (October); *Comastes* Jan, Elenco Sistematico Ophidi, 1863, p. 102.

HYPSIGLENA ORNATA Bocourt; *Comastes ornatus* Bocourt, Bull. Soc. Philomath. Paris, 1884, March, sup., p. 9.
Darien, *Viguier.*

HYPSIGLENA TORQUATA Günther: *Leptodira torquata* Günther, Ann. and Mag. Nat. Hist., v, 3d series, pl. x, fig. A.
"Nicaragua and Laguna," Colima, *Xantus.*

HYPSIGLENA DISCOLOR Günther; *Leptodira discolor* Günther, Proc. Zool. Soc. London, 1860, p. 317, June.
Oaxaca, *Sallé.*

HYPSIGLENA OCHRORHYNCHA Cope, Proc. Acad. Phila., 1860, p. 246.
Lower California, north to San Diego, *Xantus;* Guaymas, *Cragin;* Guanajuato, *Dugés;* Chihuahua, *Wilkinson.*

Liophis Wagler.

Nat. Syst. Amphib., 1830, p. 187.

LIOPHIS EPINEPHELUS Cope, Proc. Acad. Phila., 1862, p. 78; Journ. Acad. Phila., 1875, p. 136.
Darien, *Michler;* Costa Rica, *Van Patten, Gabb.*

Ophibolus Baird and Girard.

Catal. N. Amer. Serp., 1853, p. 82; *Lampropeltis* Fitzinger, Cope, 1860.

OPHIBOLUS MULTISTRATUS Kennicott, Proc. Acad. Phila., 1860, p. 328 (*Lampropelti*—
Guanajuato, *Dugés.*

OPHIBOLUS DOLIATUS Linn.
Subspecies POLYZONUS Cope, Proc. Acad. Phila., 1860, p. 258; *Lampropel. micropholis* Cope, loc. cit., 257; *Coronella formosa* Schlegel nom. nud.
Costa Rica, *Gabb;* Darien, *Selfridge;* Panama, *Leconte;* Nicaragua, *Bransfor*—Honduras, Guatemala, *Gallæ;* Tehuantepec, *Sumichrast;* Tuxpan to Ve-Cruz and Tehuantepec, *Sumichrast, Sartorius, Lincecum;* Guanajuato, *Dug*—City of Mexico, *Herrera;* Guadalaxara, *Major;* Guatemala, *Hague.*
Subspecies COCCINEUS, *Coronella coccinea* Schlegel.
Table-land, *Sumichrast;* Guatemala, *Hague;* Guadalaxara, *Major;* Colima, *Xantus*—Zacualtipan, *Bernad.*

OPHIBOLUS GETULUS Linn.
Subspecies CONJUNCTUS Cope, Proc. Acad. Phila., 1861, p. 301.
Cape St. Lucas, Lower California, *Xantus.*

S CALIFORNIÆ Blainville; Baird and Girard, Catal., p. 153.
. Lucas, *Xantus.*

Pliocercus Cope.

l. Phila., 1860, p. 253; *Elapochrus* Peters, Monatsb. Preuss. Akad., 1860, p. *Cosmiosophis* Jan, Archiv. per la Zoologia Modena, 1863, p. 379.

US KURYZONUS Cope, loc. cit., 1862, p. 72, and 1871, p. 200; *Cosmiosophis ens* Jan, loc. cit., and Iconogr. Gén. des Ophidiens.
Michler, Selfridge.

US DIMIDIATUS Cope, Proc. Acad. Phila., 1865, p. 190; Journ. Acad. Phila., p. 138.
ica, *Riotte, Van Patten;* Nicaragua, *Bransford, Moser.*

US SARGI Fischer, Archiv f. Naturgesch., xxxvii, 1881, pl. xi, figs. 1–3.
Sarg.

US ÆQUALIS Salvin, Proc. Zool. Soc. London, 1861, p. 227; Müller, Verhandl. forsch. Gesselsch., Basel, 1878, p. 662, pl. iv, fig. A.
z, *Salvin, Müller;* Teziutlan, Puebla, *Mision Geográfica;* Tuxpan, *Lincecum.*

US ELAPOIDES Cope, loc. cit., *Elapochrus deppei* Peters, loc. cit.; *Cosmiosophis tus* Jan, Iconograph. Gén. des Ophidiens, liv., 18, pl. iv, figs. 4–6. *Liophis des* Garman, Mem. Mus. Comp. Zool., Cambridge, 1883, pp. 69–157.
Comision Geográfica; Vera Cruz, Orizaba, *Sumichrast;* Mirador, *Sartorius;* mala, *Müller.*

Dromicus Bibron.*

ie Générale, vii, p. 646.

S PUTNAMI Jan, Elenco Sistematico, et Iconografie Générale.
Jan.

S CLAVATUS Günther.
ala, *Günther.*

S CŒRULEUS Fischer, Jahrb. d. Wiss. Anstalt, Hamburg, 1885, 103, pl. iv, Coban, *Sarg.*

Henicognathus Dum. et Bibron.

nérale, viii, p. 328; Cope, Journ. Acad. Phila., 1875, p. 138.

GATHUS ANNULATA Dum. et Bibr., loc. cit., 335.
, Coban, *Berendt;* Belize, "*Agric. Department*"; Arroyo del Potrero, Vera *Comision Geográfica.*

Rhadinæa Cope.

l. Phila., 1863, p. 101; 1868, p. 132.

A QUINQUELINEATA Cope, Proc. Amer. Philos. Soc., 1886 (1885), pp. 277.
ipan, *Bernad.;* Teziutlan, Puebla, *Comision Geográfica.*

A FULVIVITTIS Cope, Journ. Acad. Phila., 1875, p. 139.
, Vera Cruz, *Sumichrast.*

A SUMICHRASTI Bocourt; *Henicognathus sumichrasti* Boc., Miss. Sci. Mexique les, p. 628, pl. xli, fig. 5; *Masticophis* sp., Sumichrast, Bull. de la Société de France, 1880, p. 183.
eto, Tehuantepec, *Sumichrast.*

* It is not certain that the species here enumerated really belong to this genus.

RHADINÆA VITTATA Jan, *Enicognathus vittatus* Jan, Prodrome Icon. Gén. Ophid. Archiv., p. 1. Zoologia Modena, ii, 1863, March; *Id.*, Iconogr. Gén. Ophid. livr., 16, pl. ii, fig. 3; Bocourt, Miss. Sci. Mex., Rept., p. 630, pl. xli, fig. 1; *Dromicus taniatus* Peters, Monatsber. k. Preuss. Akad., 1863, p. 275, June; *Rhadinæa taniata* Cope, Journ. Acad. Phila., 1875, p. 139.

Mexico, *Peters*.

RHADINÆA LORÆATA Günth. Cope, Journ. Acad. Phila., 1863, p. 140; *Dromicus loreatus* Günther, Ann. and Mag. Nat. Hist., 1868, p. 419, pl. xix, fig. E.

"City of Mexico," *Günther*.

RHADINÆA FULVICEPS Cope, Proc. Amer. Philos. Soc., 1885, November, 1886, p. 279.

Panama, *Nelson*.

RHADINÆA LACHRYMANS Cope, Journ. Acad. Phila., 1875, p. 140; *Lygophis lachrymans* Cope, Proc. Amer. Phil. Soc., 1869, p. 154.

Middle "Mexico," *Sumichrast*.

RHADINÆA DECORATA Günther, Cope, Proc. Acad. Phila., 1863, p. 101; *Coronella decorata* Günther, Catal. Coll. Snakes, Brit. Mus., 1858, p. 35; *Diadophis decoratus* Cope, loc. cit., 1860.

Veragua, *Mitchill*; E. Costa Rica, *Gabb*; Nicaragua, *Bransford*; Tierra Caliente *Sumichrast*; Jicaltepec, Vera Cruz, *Mision Geográfica*.

RHADINÆA IGNITA Cope, Journ. Acad. Phila., 1875, p. 140; *Dromicus ignitus* Cope, Proc. Acad. Phila., 1871, p. 204.

Darien, *Selfridge*.

RHADINÆA VERMICULATICEPS Cope, Journ. Acad. Phila., 1875, p. 139; *Tæniophis vermiculaticeps* Cope, Proceeds. Acad. Phila., 1860, p. 249.

Veragua, *Mitchell*; Costa Rica, *Van Patten*.

RHADINÆA SERPERASTRA Cope, loc. cit., 1871, p. 212; Journ. Acad. Phila., 1875, p. 140.

Costa Rica, *Gabb*.

RHADINÆA GODMANI Günther; Cope, Journ. Acad. Phila., 1875, p. 139; *Dromicus godmani* Günther, Ann. and Mag. Nat. Hist., 1865, February.

Guatemala, *Godman*.

Diadophis Baird and Girard.*

Catal. Serp. N. Amer., 1853, p. 112.

DIADOPHIS PUNCTATUS Linn.,† Baird, Girard; *Ablabes punctatus* Dum., Bibr., vii, p. 310; Jan, Elenco.

Subspecies ARNYI Kennicott; *Diadophis arnyi* Kenn., Proc. Acad. Phila., 1859, p. 99.

Mirador, Vera Cruz, *Sartorius*; Guanajuato, *Dugés*; Zacualtipan, *Bernad*.

Subspecies REGALIS Baird, Girard.

"Sonora, *Graham*."

Trimetopon Cope.

Proc. Amer. Philos. Soc., 1884, p. 177: an *Hydromorphus* Peters?

TRIMETOPON GRACILE Günther, Cope, loc. cit.; *Ablabes gracilis* Günther, Ann. and Mag. Nat. Hist., 1872, p. 18.

Costa Rica, *Günther*.

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* I at one time placed the species of Rhadinæa known to me in this genus, as they are very nearly allied, and in this I have been followed by Garman. But they have no scale pores, while there is a single pore on the scales of Diadophis. I cannot therefore unite them. Diadophis is not characterized by the presence of two preoculars, as supposed by Jan.

†Of two specimens from Guanajuato one has seven, the other eight superior labials; one has two preoculars, while a specimen from the State of Vera Cruz has but one.

Contia Baird and Girard.

Catal. N. Amer. Serpents, 1853, p. 110; Cope, Proc. Acad. Phila., 1862, p. 339; *Eirenis* Jan, Elenco Sist., 42–48, 1863.

CONTIA CALLIGASTER Cope, Journ. Acad. Phila., 1875, p. 146.
Cordilleras of Costa Rica, *Gabb.*

CONTIA PACHYURA Cope, loc. cit., p. 145.
E. Costa Rica, *W. M. Gabb.*

CONTIA MICHOACANENSIS Dugés, Proc. Amer. Philos. Soc., 1884, p. 178.
Michoacan, *Dugés.*

Sympholis Cope.

Proc. Acad. Phila., 1861, p. 524; *Chilorhina* De Filippi, Jan, Arch. per la Zoologia, Modena, ii, 57, 1862.

SYMPHOLIS LIPPIENS Cope, loc. cit., 1861, p. 524; *Chilorhina villarsii* De Filippi, Jan, loc. cit. et Iconogr. Gén. des Ophidiens, 48 Livr., pl. i, f. 5.
Guadalaxara, *Major.*

Ficimia Gray.

Catal. Snakes Brit. Mus., p. 80, 1849; *Amblymetopon* Günther, Catal. Colubrine Snakes in Brit. Mus., 1858, p. 7.

FICIMIA OLIVACEA Gray, loc. cit.; *F. elæochroma* Jan, Arch. Zool. Modena, 1862, p. 58; *Amblymetopon variegatum* Günther, Catal. Brit. Mus., 1858, p. 7.
Zacualtipan, *Bernad;* Tuxpan, *Lincecum;* Orizaba, *Sumichrast;* Tehuantepec, *Sumichrast.*

Gyalopium Cope.

Proc. Acad. Phila., 1860, p. 243.

GYALOPIUM PUBLIUM Cope, Amer. Naturalist, 1884, p. 163; *Ficimia publia* Cope, Proc. Acad. Phila., 1866, p. 126; *Ficimia ornata* Bocourt, Miss. Sci. Mex., 1883, p. 571, pl. xxv, fig. 10.
Yucatan, *Schott.*

Stenorhina Dum. et Bibr.

Erp. Gén., vii, 865; *Microphis* Hallowell, Journ. Acad. Phila., 1855–'58, p. 33.

STENORHINA DEGENHARDTII Berthold; *Calamaria degenhardtii* Berthold, Ueber N. Rept. New Grenada, 1846, p. 8, pl. i, f. 3–4.
Subspecies DEGENHARDTII Berth., loc. cit.; *Stenorhina ventralis* Dum. et Bibr. Erp. Gén., vii, p. 867; *Stenorhina lactea* Cope, Proc. Acad. Phila., 1861, p. 303.
Guatemala, *Dow;* Costa Rica, *Gabb;* Coatzacoalcos R., *Streets;* W. Tehuantepec, *Sumichrast;* Cordova, *Sumichrast;* Mirador, *Sartorius.*

Subspecies APIATA Cope, Journ. Acad. Phila., 1875, p. 142.
Tehuantepec, *Sumichrast.*

Subspecies FREMINVILLEI Dum. et Bibr.; *Sternorhina freminvillei* Dum. et Bibr., vii, 868; *Microphis quinquelineatus* Hallow., loc. cit.
Costa Rica, *Van Patten;* Honduras, *Woodhouse;* Guatemala, *Hague;* Tehuantepec, *Sumichrast.*

Chilomeniscus Cope.

Proc. Acad. Phila., 1860, p. 339; *Bergenia* Steindachner, Reise der Navara, 1876, p. 92.

CHILOMENISCUS MEHICANUS Steindachner; *Bergenia mexicana* Stein., loc. cit., 92, fig. p. 93.
"Mexico," *Steindachner.*

CHILOMENISCUS STRAMINEUS Cope, Proc. Acad. Phila., 1860, p. 339.
Cape San Lucas, Lower California, *Xantus, Belding.*

CHILOMENISCUS CINCTUS Cope, Proc. Acad. Phila., 1861, p. 303.
Guaymas, Sonora, *Mus. Comp. Zoology.*

Geagras Cope.

Journ. Acad. Phila., 1875, p. 141; *Pseudoficimia* Bocourt, Miss. Sci. Mex., 572; *Enulius* Bocourt, loc. cit., 536, nec copei; *Sphenocalamus* Fischer, Oster Programm des Ak. Gymnas. Hamburg, 1863.

GEAGRAS REDIMITUS Cope, Journ. Acad. Phila., 1875, p. 141; *Sphenocalamus lineolatus* Fisch., loc. cit., separate p. 5, pl., fig. 3, 4, 5.
Tehuantepec, *Sumichrast;* Mazatlan, *Fischer.*

GEAGRAS FRONTALIS Cope, Journ. Acad. Phila., 1875, p. 142; *Toluca frontalis* Cope, Proc. Acad. Phila., 1864, p. 147; *Pseudoficimia pulchra* Bocourt, Miss. Sci. Mex., 1883, 572, pl. xxxv, fig. 12.
Colima, *Xantus;* Guadalaxara, *Major.*

GEAGRAS SUMICHRASTI Bocourt, Cope, Amer. Naturalist, 1884, p. 162; *Enulius sumichrasti* Bocourt, Mis. Sci. Mex., p. 538, pl. xxxi, fig. 6.
W. Tehuantepec, *Sumichrast.*

GEAGRAS LONGICAUDATUS Cope, Amer. Naturalist, 1884, p. 162; *Enulius marinus* Bocourt, Mis. Sci. Mex., p. 537, pl. xxxv, fig. 9, nec Copei.
W. Tehuantepec, *Sumichrast.*

Toluca Kennicott.

U. S. & Mex. Bound. Surv., ii, 1859, p. 23; *Achirina* Jan, op. cit., 1862, p. 61.

TOLUCA LINEATA Kenn., loc. cit.; *Achirina de filippii* Jan, op. cit., 1862, p. 61.
Valley of Mexico, *Potts;* Puebla, *Boucard;* Toluca (?), *Hoege.*

Conopsis Günther.

Catal. Col. Serp. Brit. Mus., 1858, p. 47; *Exorhina* Jan, Arch. Zool., 1862, p. 62.

CONOPSIS NASUS Günther, loc. cit.; *Exhorina maculata* Jan, loc. cit.; *Conopsis maculatus* Bocourt, l. c., p. 564, pl. xxxv, f. 3.
"Mexico," *Boucard.*

Chionactis Cope.

Proc. Acad. Phila., 1860, 211; Journ. Acad. Phila., 1875, p. 142.

CHIONACTIS DIASII Cope, Proc. U. S. Nat. Mus., 1886, p. 188; *Conopsis lineatus* Boc. l. c., p. 565, pl. xxxv, fig. 4; nec *Toluca lineata* Kennicott.
Puebla, *Comision Geográfica.*

Rhinochilus Baird, Girard.

Catal. Rept. N. Amer., Serpents, 1853, p. 120.

RHINOCHILUS ANTONII Dugés, Proc. Amer. Philos. Soc., 1886, p. 290.
Mazatlan *Dugés.*

Ogmius Cope.

Proc. Amer. Philos. Soc., 1869, p. 162; *Oxyrhina* Jan, Arch. p. Zoologia, 1862, p. 59, nec Agassizii.

OGMIUS ACUTUS Cope, Proc. U. S. Nat. Mus., 1886, p. 189; *O. varians* Cope, Proc. Amer. Philos. Soc., 1869, p. 162, not of Jan.
W. Tehuantepec, *Sumichrast.*

OGMIUS VARIANS Jan; *Oxyrhina varians* Jan, loc. cit., p. 60.
Vera Cruz (?), *Sumichrast.*

Elapomorphus Wiegmann.

um. et Bibr., vii, p. 832.

APOMORPHUS MEXICANUS Günther, Ann. and Mag. Nat. Hist., 1862, p. 57.
"Mexico."

Procinura Cope.

c. Amer. Philos. Soc., 1879, p. 262.

OCINURA ÆMULA Cope, loc. cit.
Iatopilas, Chihuahua, *Wilkinson.*

Scolecophis Cope.

c. Acad. Phila., 1860, p. 259.

OLECOPHIS ATROCINCTUS Schlegel; Cope, Proc. Acad. Phila., loc. cit.; Bocourt, Miss. Sci. Mex., p. 577, pl. xxxvii, fig. 2; *Calamaria atrocincta* Schlegel, Essai sur la Phys. des Serpents, 1837, i, p. 184; *Homalocranium atrocinctum* Dum. et Bibr.; *Elaps zonatus* Hallow.; *Scolecophis zonatus* Cope, loc. cit.; *Tantilla atrocincta* Cope, Journ. Acad. Phila., 1875, p. 145.

Honduras, *Woodhouse;* Vera Paz, *Bocourt;* Toluca, *Vasquez.*

Tantilla Baird and Girard.

al. N. Amer. Serpents, 1853, p. 31; *Homalocranium* Dum. et Bibr., Erp. Gén., vii, p. 855; *Lioninia* Hallowell, Proc. Acad. Phila., 1860, p. 484.

NTILLA MŒSTA Günther, Cope, loc. cit., 1866, p. 126; *Homalocranium mœstum;* Günther, Ann. Mag. Nat. Hist., 1863.
Yucatan, *Schott;* Peten, *Morelet.*

NTILLA SCHISTOSA Bocourt; *Homalocranium schistosum* Bocourt, Miss. Sci. Mexique, p. 584, pl. xxxvi, fig. 10.
Vera Paz, *Boucard.*

NTILLA MELANOCEPHALA Schlegel, Dum. et Bibr., Erp. Gén., vii, p. 859; Cope, Journ. Acad. Phila., 1875, p. 142.
Central Costa Rica, *Van Patten;* Nicaragua, *MacNiel;* Guatemala, *Bouvier.*

NTILLA CORONATA Baird and Girard, Catal. Serp., p. 131; Cope, Journ. Acad. Phila., 1875, p. 144; *Homalocranium coronatum* Bocourt, Miss. Sci. Mex., 589, pl. xxxvii, fig. 5.
Guanajuato, *Dugès.*

NTILLA DEPPEI Bocourt; *Homalocranium deppei* Bocourt, Miss. Sci. Mexique, p. 584, pl. xxvi, fig. 11.
Mexico, *Ghiesbrecht.*

NTILLA CANULA Cope, Journ. Acad. Phila., 1875, p. 144; *Tantilla vermiformis* "Hallow.," Cope, Proc. Acad. Phila., 1866, p. 126; nec Hallowelli.
Yucatan, *Schott.*

NTILLA TÆNIATA Bocourt; *Homalocranium tæniatum* Bocourt, Miss. Sci. Mex., p. 587, pl. xxxvii, fig. 3.
Guatemala, *Bourier.*

NTILLA RUBRA Cope, Proc. Acad. Phila., 1875; Journ. Acad. Phila., 1875, p. 144.
Huantepec, *Sumichrast.*

NTILLA ARMILLATA Cope, Journ. Acad. Phila., 1875, p. 143; *T. melanocephala* var. Cope, Proc. Acad. Phila., 1871, p. 205.
Costa Rica, *Van Patten.*

NTILLA SEXFASCIATA Fischer; *Homalocranium sexfasciatum* Fischer, Abhand. Natur.-Wiss. Ver. Bremen, 1881, p. 225.
Costa Rica, *Lehmann.*

TANTILLA RETICULATA Cope, loc. cit., 1860, p. 77.
Veragua, Panama, *Mitchell.*

TANTILLA VIRGATA Günther; *Microdromus virgatus* Günther, 1872, p. 17, pl. iv; *Homalocranium virgatum* Bocourt, Miss. Sci. Mex., p. 585, pl. xxxvi, fig. 4.
Costa Rica, *Salvin.*

TANTILLA VERMIFORMIS Hallowell; Cope, Proc. Acad. Phil., 1861, p. 74; *Lioninia vermiformis* Hallowell, loc. cit., 1860, p. 484.
Nicaragua, *Stimpson.*

TANTILLA MINIATA Cope, Proc. Acad. Phila., 1863, p. 100; ("*miniator*," errore typo[illegible]t.)
Mirador, Vera Cruz, *Sartorius.*

TANTILLA BIMACULATA Cope, Journ. Acad. Phila., 1875, p. 143.
Mazatlan, *Bischoff.*

TANTILLA PLANICEPS Blainville, Baird and Girard, Catal., p. 154.
Lower California, *Botta.*

TANTILLA CALAMARINA Cope, Proc. Acad. Phila., 1866, p. 320.
Guadalaxara, *Major;* Puebla, *Comision Geográfica;* Valleys of Toluca or Mexi[illegible]co, *Höge.*

Cercocalamus Günther.

Ann. and Mag. Nat. Hist., 1863, January.

CERCOCALAMUS COLLARIS Günther, loc. cit., pl. iii, fig. A.
"Central America," *Günther.*

Enulius Cope.

Peabody Acad. Sciences, Salem, 1869, p. 80; Proc. Amer. Philos. Soc., 1870, p. 558.

ENULIUS MURINUS Cope, Proc. Amer. Philos. Soc., 1870, p. 558.
Nicaragua, *MacNiel.*

Leptocalamus Günther.

Ann. Mag. Nat. Hist., 1872, p. 16.

LEPTOCALAMUS UNICOLOR Fischer; *Geophis unicolor* Fischer, Abhandl. d. Natur.-Wi[illegible] Vereins Bremen, 1881, p. 227.
"Mexico," *Fischer.*

As Fischer remarks, this species should be generically distinguished from *Rhabdeosom*[illegible] on account of the presence of a long posterior maxillary tooth, the dentition bein[illegible] syncranterian. The other characters are, two nasal scuta; loreal reaching the eye[illegible] no preocular; one pair genciais; anal double.

Elapoidis Boie.

Isis von Oken, 1827, p. 519; Dum. Bibr., Erp. Gén., vii, p. 123; Jan, Arch. p. Zoologia[illegible] 1862; *Catostoma* Wagler, Nat. Syst. d. Amphib., 1830, p. 194; *Geophis* Wagler, loc cit., p. 342.

ELAPOIDIS CHALYBÆUS Wagl.; *Catostoma chalybœum* Wagler, Nat. Syst. Amphib.[illegible] 1830, p. 194; *Elapoidis sieboldii* Jan, Arch. per la Zoologia, Modena, ii, 1862, p. 21[illegible] Iconographie d. Ophidiens, livr. 12, pl. i, fig. 4; *Geophis chalybœus* "Wagler," Bo[illegible] court, Miss. Sci. Mex., p. 530.
Guatemala, *Bocourt;* mountains south of plateau, *Sartorius.*

ELAPOIDIS PSEPHOTUS Cope; *Catostoma psephotum* Cope, Journ. Acad. Phila., 1875, p. 146.
Costa Rica, *Gabb.*

ELAPOIDIS DOLICHOCEPHALUS Cope; *Colobognathus dolichocephala* Cope, Proc. Acad. Phila., 1871, p. 211; *Catostoma dolichocephalum* Cope, Journ. Acad. Phila., 1875, p. 147.
Costa Rica, *Van Patten.*

ELAPOIDIS BRACHYCEPHALUS Cope; *Colobognathus brachycephala* Cope, loc. cit., 1871, p. 211; *Catostoma brachycephalum* Cope, Journ. Acad. Phila., 1875, p. 147.
Costa Rica, *Van Patten.*

ELAPOIDIS DUGÉSI Bocourt; *Geophis Dugési* Bocourt, Miss. Sci. au Mexique, p. 573, pl. xxxvii, fig. 1.
Tangancicuaro, *Dugés.*

ELAPOIDES FASCIATUS Fischer; *Virginia fasciata* Fischer, Jahrb. d. Wiss. Anst. Hamburg, ii, 1885, p. 95.
Guatemala, *Sarg.*

Rhabdosoma Dum. Bibr.

Erpétologie Générale, vii, p. 91; Cope, Proc. Amer. Phil. Soc., 1885, p. 385; *Catostoma* et *Geophis* pars auctorum.

RHABDOSOMA BICOLOR Günther; *Geophis bicolor* Günther, Ann. and Mag. Nat. Hist., 1868, p. 416; *R. hoffmanni* Jan, Iconographie Générale des Ophidiens, livr. 12, pl. ii, fig. 3, nec *Colobognathus hoffmanni* Peters.
Near city of Mexico, *Günther.*

RHABDOSOMA ZEBRINUM Jan, Arch. per la Zoologia Modena, 1862, p. 15; Bocourt, Miss. Sci. Mexique, pl. xxxi, fig. 1, p. 539.
Tehuantepec, *Bocourt.*

RHABDOSOMA ROSTRALE Jan; *Elapoidis rostralis* Jan, Iconogr. Gén. des Ophid., 12 livr., pl. ii, fig. 4; *Geophis rostralis* Bocourt, Miss. Sci. Mex., 533, pl. xxxi, fig. 10.
? Hab.

RHABDOSOMA NASALE Cope; *Catostoma nasale* Cope, Proc. Acad. Phila., 1868, p. 131; *Colobognathus nasalis* Cope, loc cit., 1871, p. 212.
Central Costa Rica, *Van Patten.*

RHABDOSOMA GUTTULATUM Cope, Proc. Amer. Philos. Soc., 1885, p. 385.
State of Vera Cruz, *Sumichrast, Sartorius.*

RHABDOSOMA MUTITORQUES Cope, Proc. Amer. Philos. Soc., 1885, p. 384.
Zacualtipan, Northeast Hidalgo, *Bernad.*

RHABDOSOMA LONGICEPS Cope, Proceeds. U. S. National Mus., 1886, p. 189.
San José, Acateno. Vera Cruz, *Comision Geográfica.*

RHABDOSOMA SEMIDOLIATUM Dum. Bibr., Erp. Gén., vii, p. 93, 1854; *Elapoidis semidoliatus* Jan, Arch. p. la Zool. Modena., 1862, p. 22; Icon. Gén. des Ophidiens, livr. 12, pl. ii, fig. 1; *Geophis semidoliatus* Bocourt, Miss. Sci. Mex., p. 534, pl. xxxi, fig. 7.
State of Vera Cruz, *De Oca, Sumichrast, Sartorius;* Jalapa, *Flohr;* Misantla and Jalapa, Vera Cruz, *Comision Geográfica;* Zacualtipan, *Bernad.*

RHABDOSOMA MOESTUM Günther; *Geophis moestus* Günther, Ann. Mag. Nat. Hist., 1872, p. 15.
Costa Rica, *Günther.*

Adelphicus Jan.

Arch. p. la Zool., ii, fasc. i, p. 18, 1862; Bocourt, Miss. Sci. Mex., 553; *Rhegnops* Cope Proc. Acad. Phila., 1866, p. 128.

ADELPHICUS SARGII Fischer; Jahrbuch d. Wiss. Anstalt., Hamburg, ii, 1885, p. 92.
Guatemala, *Sarg.*

ADELPHICUS VISONINUS Cope; *Rhegnops visoninus* Cope, loc. cit., 1866, p. 128.
Honduras, *Parsons.*

ADELPHICUS QUADRIVIRGATUS Jan, Arch. p. la Zool., ii, 1862, p. 18; Icon. Gé
Ophidiens, livr. 12, pl. iii, fig. 5; Bocourt, Miss. Sci. au Mex., 554. pl. xxxii, fig
Vera Paz, *Bocourt;* Jicaltepec, Vera Cruz, *Mision Geográfica.*

Colophrys Cope.

Proc. Acad. Phila., 1868, p. 130.

COLOPHRYS RHODOGASTER Cope, loc. cit., 1868, p. 130.
Costa Rica, *Van Patten;* Yucatan, *Schott;* Guatemala, *Bocourt.*

Geophidium Peters.

Monats. K., Preuss. Akad. Wiss., 1861, p. 923.

GEOPHIDIUM DUBIUM Peters, loc. cit.
W. Guatemala, *Bocourt;* Tehuantepec, *Peters.*

Colobognathus Peters.

Monats. K., Preuss. Akad., 1859, p. 216; 1863, p. 214.

COLOBOGNATHUS HOFFMANNI Peters, loc. cit.; Cope, Journ. Acad. Phila., 1875, 1
Costa Rica, *Hoffmann, Gabb.*

PROTEROGLYPHA.

ELAPIDÆ.

Elaps Schneider.

Dum. et Bibr., vii, p. 1191.

ELAPS DECORATUS Jan, Prodr., 1859, p. 14.
"Mexico," *Jan.*

ELAPS MARCGRAVII Wied.
Subspecies LATICOLLARIS Peters, Monats. K., Preuss. Akad., 1869, p. 877.

ELAPS ELEGANS Jan, Prodr., 1859, p. 13.
Vera Cruz and N. E. Mexico, *Sartorius.*

ELAPS AGLÆOPE Cope, Proc. Acad. Phila., 1859, p. 344.
Honduras, *Leconte;* Peten, *Berendt.*

ELAPS EPHIPPIFER Cope, Proc. Amer. Philos. Soc., 1885 (6) p. 281; *E. aglæops* Cop
cit., 1869, p. 162.
W. coast Tehuantepec, *Sumichrast.*

ELAPS EURYXANTHUS Kennicott, Proc. Acad. Phila., 1860, p. 337.
Guyamas, *Cragin;* Batopilas, Chihuahua, *Wilkinson.*

ELAPS NIGROCINCTUS Girard, U. S. Astronom. Exped., p, 281; Cope. Journ. Acad. P
1875, p. 148.
Panama, *Leconte, Nelson;* Nicaragua, *MacNiel, Bransford;* Costa Rica, *Van P*
Gabb, Zeledon; Yucatan, *Schott;* San Salvador, *Dow;* Guatemala, *Hague*
huantepec, *Sumichrast.*

ELAPS HIPPOCREPIS Peters, loc. cit., p. 21.

ELAPS FULVIUS Linn., Baird and Girard, Catal., p. 21.
Guanajuato, *Dugés.*

ELAPS CORALLINUS Linn.
Subspecies CREBRIPUNCTATUS Peters, Monats. K., Akad. Preuss., 1869, p. 87
"Northern Mexico," *Peters.*

ELAPS MULTIFASCIATUS Jan, Icono. Gén. Oph., p. 10; Cope, Proc. Acad. Phila., 1871, p. 209; Journ. Acad. Phila., 1875, p. 148.

W. Costa Rica, *Van Patten;* Nicaragua, *Bransford.*

ELAPS APIATUS Jan, Prodr., 1859, p. 11.

"Mexico," *Jan;* Coatzacoalcos, R., *Streets;* Jicaltepec, Vera Cruz, *Comision Geográfica;* Orizaba, Vera Cruz, *Sumichrast.*

ELAPS HYPOSTEMA Jan, Elenco Sist., 1863, p. 113.

"Mexico," *Jan.*

ELAPS BERNADI Cope, sp. nov.

This species is founded on a specimen from Zacualtipan, Hidalgo, sent me by Dr. Santiago Bernad. It is allied to the *E. epistema* D. & B., but has better claim to be regarded as a species than that form. The head and nape are black above and below, except a band of yellow from lip to lip crossing the middle of the occipital plates. The body is red, and is marked by forty-one broadly oval black spots placed transversely and separated by narrow interspaces of two and three scales length. The red spots are not light-bordered, and the red scales have no markings. The belly is unspotted. The tail is of lighter color than the body, and is marked by seven black rings.

Gastrosteges, 218; anal divided; urosteges, 37. Total length, 807^{mm}; length of tail, 90^{mm}.

Zacualtipan, *Bernad.*

ELAPS EPISTEMA Dum. et Bibr., vii, p. 1222.

"Mexico," *Dum. et Bibr.*

ELAPS ORNATISSIMUS Jan, Prod. d'une Icono., &c., 1859, p. 10; Cope, Journ. Acad. Phila., 1875, p. 148.

"Mexico," *Jan;* W. Costa Rica, *Van Patten;* Belize, *Parsons;* Coatzacoalcas, R., *Streets.*

ELAPS CIRCINALIS Dum. et Bibr., Cope, Journ. Acad. Phila., 1875, p. 148.

Talamanca, Costa Rica, *Gabb.*

HYDROPHIDÆ.

Pelamis Daud.

Rept., vii, 366, 1802.

PELAMIS BICOLOR Daud., loc. cit.; Cope, Journ. Acad. Phila., 1875, p. 148.

Pacific coast Panama, *Leconte, Dow;* Pacific coast Costa Rica, *Van Patten;* Pacific coast Guyamas. ?

SOLENOGLYPHA.

CROTALIDÆ.

Teleuraspis Cope.

Proc. Acad. Phila., 1859, p. 338.

TELEURASPIS SCHLEGELII Berth., Cope, Journ. Acad. Phila., 1875, pp. 157, 149; Proc. Acad. Phila., 1860, p. 345.

Var. SCHLEGELII Berth., Cope, loc. cit.

Veraguas, *Mitchell;* Costa Rica, *Gabb;* Panama, *Bransford.*

Ophryacus Cope, gen. nov.

This genus differs from *Bothrops* in the prolongation of one of the superciliary scal into a horn-like process.

OPHRYACUS UNDULATUS Jan, Cope, loc. cit.; *Atropus undulatus* Jan, Rev. et Mag. Zool., 1859, p. 157; Prodr. Icon. des Oph., p. 157.
Central Mexico, *Sumichrast;* Actopam, Vera Cruz, *Comision Geográfica Explorad*

Bothriechis Peters.

Thamnocenchris Salvin, Proc. Z. S., London, 1860, 459.

BOTHRIECHIS NIGROVIRIDIS Peters, Monats. K., Preuss, Akad., 1859, p. 278; Cope, P Acad. Phila., 1859, p. 345; Journ. Acad. Phila., 1875, p. 150.
Costa Rica, *Gabb, Van Patten.*

BOTHRIECHIS AURIFER Salvin, Cope, Proc. Acad. Phila., 1871, p. 205; *Thamnocenc aurifer* Salvin, Proc. Zool. Soc. London, 1860, p. 459 tab.; Ann. Mag. Nat. H 1861, p. 325.
Peten, Guatemala, *Salvin.*

BOTHRIECHIS LATERALIS Peters, Monats. K., Akad. Preuss., 1862, p. 674; *Bothrop lineatus* Peters, loc. cit., 1859, p. 278; † *Bothrops bicolor* Bocourt, Ann. des Sci. N 1868, p. 201.
Western Guatemala, *Bocourt.*

BOTHRIECHIS BERNOUILII Müller, Mittheilungen a. d. Herpet. Sammlung Mus. B (sine origine et dato), p. 11, pl. iii, fig. A.
West coast of Guatemala, *Bernouilli.*

Bothriopsis Peters.

Monats. Akad. Berlin, 1851, p. 359; Cope, emend. Proc. Acad. Phila., 1871, p. 208.

BOTHRIOPSIS SCUTIGERA Fischer; *Bothriechis scutigera* Fischer, Archiv. f. Natu schichte, 1880, p. 208, pl. viii, figs. 8, 9.
Guatemala, *Fischer.*

BOTHRIOPSIS GODMANI Günther; *Bothriechis godmani* Günther, Ann. Mag. Nat. H 1861, vii, p. 325; *Bothriopsis godmani* Cope, loc. cit.
Guatemala, *Hague.*

BOTHRIOPSIS TRIANGULIGERA Fischer; *Bothriechis trianguligera* Fischer, Oster., gramm. des Akad. Gymnasiums, Hamburg, 1883, sep., p. 13.
Guatemala, *Peper.*

BOTHRIOPSIS OPHRYOMEGAS Bocourt, Cope, Proc. Acad. Phila., 1871, p. 208; *Both ophryomegas* Bocourt, Ann. Sci. Nat., 1868, p. 201.
"Central America," *Bocourt.*

BOTHRIOPSIS AFFINIS Bocourt, Ann. Sci. Nat., 1868, p. 201; *B. affinis* Cope, Journ. A Phila., 1875, p. 150; *Teleuraspis mexicanus* Cope, Proc. Acad. Phila., 1859, p. *Bothriechis mexicanus* Cope, loc. cit., 1860, p. 345; nec *Atropus mexicanus* Du Bibr.
Mexico, as far north as Tuxpan, and Central America to Costa Rica; *Sartorius, S chrast;* Zacualtipan, *Bernad.*

BOTHRIOPSIS MEXICANUS Dum., Bibr., Cope, loc. cit., 1871, p. 209; *Atropus mexic* Dum et Bibr., Erp. Gén., viii, p. 1521, tab. 83, bis; †*Atropos nummifer* Rüp Verzeichn. Senck. Mus. Frankf., p. 21; Fischer, Archiv f. Naturg., 1880, p. 22, figs. 10–12; (var.) *Teleuraspis nummifer* Günther, Ann. Mag. Nat. Hist., March, tab. iii, f. c.; nec Copei, Proc. Acad. Phila., 1859, 339, et 1860, 345 *affinis* Bocourt.
Tierra Caliente of Mexico; Guatemala, *Hague.*

BOTHRIOPSIS BRACHYSTOMA Cope, Proc. Acad. Phila., 1871, p. 208; *Telcuraspis castelnaudi* var. *brachystoma* Cope, loc. cit., 1859, p. 339; *Bothriechis brachystoma* Cope, loc. cit., 1861, p. 295.

Nicaragua, *Moser;* Tehuantepec, *Sumichrast;* Peten, Guatemala, *Berendt.*

BOTHRIOPSIS PROBOSCIDEUS Cope, Journ. Acad. Phila., 1875, p. 150, pl. 27, fig. 3.

Sipurio, E. Costa Rica, *Gabb.*

Porthidium Cope.

Proc. Acad. Phila., 1871, p. 207.

Perhaps to be united with Bothriopsis.

PORTHIDIUM NASUTUM Bocourt; Cope, loc. cit., et Proc. Amer. Philos. Soc., 1879, p. 271; *Bothrops nasutus* Bocourt, Ann. d. Sciences Nat., Paris, 1868, p. 202.

Guatemala, *Bocourt;* E. Costa Rica, *Zeledon.*

Ancistrodon Beauvois.

ANCISTRODON BILINEATUS Günther, Ann. and Mag. Nat. Hist., 1863, November.

West slope Guatemala, *Hague;* Tehuantepec, *Sumichrast;* Nicaragua, *MacNiel.*

Bothrops Wagler.

BOTHROPS ATROX Linn., Cope, Journ. Acad. Phila., 1875, p. 151.

Panama, *Nelson;* Costa Rica, *Gabb;* San Juan, Nicaragua, *Xantus;* Orizaba, *Sumichrast;* Mirador, Vera Cruz, *Sartorius;* Tuxpan, *Lincecum.*

Lachesis Daudin.

LACHESIS STENOPHRYS Cope, Journ. Acad. Phila., 1875, p. 152.

Sipurio, E. Costa Rica, *Gabb.*

Crotalophorus Gray.

Caudisona Fitzinger, Wagner, nec Laurentii; *Systrurus* Garman.

CROTALOPHORUS RAVUS Cope, Proc. Amer. Philos. Soc., 1885, 382; *Caudisona rava* Cope, Proc. Acad. Phila., 1865, p. 191.

South table land of Mexico, *Sartorius;* Puebla, *Comision Geográfica.*

Crotalus Linn.

Caudisona Laurenti; *Crotalophorus* Linn., pars; *Uropsophus* Wagler.

CROTALUS DURISSUS Linn., Dum. et Bibr., vii, p. 1465; *C. horridus* Dum. et Bibr Erp. Gén., vii, p. 1472.

Brazil to Vera Cruz; Yucatan, *Schott;* Tehuantepec, *Sumichrast;* Coban, *Hague;* San Salvador, *Dow.*

CROTALUS BASILISCUS Cope, Proc. Acad. Phila., 1864, p. 166; *Crotalus rhombifer* Latreille, Dugés, Naturaleza Mexico, 1877, p. 22; nec Latreillei.

Pacific coast, Colima (*Xantus*); Plateau, Guanajuato, *Dugés;* Valley of Mexico, Puebla, *Comision Geográfica.*

CROTALUS POLYSTICTUS Cope, Proc. Acad. Phila., 1865, p. 191; *Crotalus lugubris* Jan, Icon. Gén. Ophidiens, Livr. 46, pl. 3, fig. 3; *Crotalus ximinesii* Dugés, Naturaleza Mexico, 1877, pl. i, fig. 1, 1820; p. 23.

Table land, *Sartorius;* Guanajuato, *Dugés;* Valley of Mexico, *Herrera.*

CROTALUS TRISERIATUS "Wiegm.", teste Wagler; *Uropsophus triseriatus* Wagler, Naturl. Syst. der Amphibien, 1830, p. 176; Cope, Proc. Amer. Philos. Soc., 1884, p. 179; *Crotalus lugubris* Jan, Prodrome d'un Iconogr. Descr. des Ophibiens, 1859, p. 31, pl. E.

Guanajuato, *Dugés*; Jalapa, *Flohr*; Toluca, *Vasques*; Zacualtipan, Hidalgo, *Bernal*.

CROTALUS INTERMEDIUS Fischer, Abhandl. d. Natur.-Wiss. Ver. Bremen, vii, p. 230; 1881, pl. xiv, figs. 1–3; (very near *C. triseriatus*).

"Mexico."

CROTALUS ADAMANTEUS Pal., de Beauvois; Baird, Girard, Catal. Rept. N. Amer. Serpents, p. 3.

Subspecies SCUTULATUS Kenn., Cope, Check-list, 1875, p. 33; *Caudisona scutulata* Kenn., Proc. Acad. Phila., 1861, p. 207.

City of Chihuahua, *Wilkinson*.

Subspecies ATROX Baird and Girard, Cope, Check-list, 1875, p. 33; *Crotalus atrox*, Baird and Girard, Catal. Rept. N. Amer. Serpents, p. 5.

City of Chihuahua, *Wilkinson*.

CROTALUS MITCHILLII Cope, Proc. Acad. Phila., 1861, p. 293.

Lower California, *Xantus*.

CROTALUS ENYO Cope, Proc. Acad. Phila., 1861, p. 293.

Lower California, *Xantus*.

ADDENDA.

Hypopachus Keferst.

HYPOPACHUS OXYRRHINUS Boulenger, Ann. Magaz. Nat. Hist., 1883, xi, p. 344.

W. Mexico, Presidio, *Forrer*.

Rana Linn.

RANA FORRERI Boulenger, Ann. Magaz. N. Hist., 1883, xi, p. 343.

Presidio, W. Mexico, *Forrer*.

RANA PUSTULOSA Boulenger, l. c., p. 343.

Ventanas, *Forrer*.

Eublepharis Gray.

Boulenger, Catal. Liz. Brit. Mus., 1885, p. 230.

EUBLEPHARIS FASCIATUS Boulenger l. c., p. 234.

Ventanas, *Forrer*.

Cophias Fitzinger.

Boulenger, Catal. Liz. Brit. Mus. 1885, p. 417.

COPHIAS HETEROPUS Bœttger; *Herpetochalcis heteropus* Bœttg., ver. Offenb. für Naturk., 1883, p. 150.

†Central America, *Bœttger*.

Eumeces Wiegm.

EUMECES BOCOURTII Boulenger, Ann. Mag. Nat. Hist., 1883, xi, p. 342.

Presidio, N. Mexico, *Forrer*.

Rena Bd. Gird.

RENA TENUICULA Garman; *Stenostoma tenuiculum* Garman, Mem. Mus. Comp. Zoölogy Cambridge, 1883, p. 5.
San Luis Potosi, *Garman.*

Helminthophis Peters.

HELMINTHOPHIS EMUNCTUS Garman; *Typhlops* (*Idiotyphlops*) *emunctus* Garman, Mem. Mus. Compar. Zoölogy Cambridge, 1883, p. 3.
Panama, *Garman.*

Rbabdosoma D & B.

RHABDOSOMA LATIFRONTALE Garman; *Geophis latifrontalis* Garm., Rept. Batrach. N. Amer., Mem. Mus. Comp. Zoölogy Cambridge, 1883, p. 103.
Nearest *R. mutitorques*, but has the rostral plate prolonged on the top of the muzzle.
Fifty miles so. St. Luis Potosi, *Palmer.*

Dipeltophis Cope.

Antea, p. 58.
DIPELTOPHIS ALBOCINCTUS Fischer; *Leptognathus albocinctus* Fischer, Jahrb. d. Wiss. Anst. Hamburg, ii, p. 109.
† Lower California ("California" Fisch.) *Behrens.*

The family Scaphiopidæ, page 12, should be Pelobatidæ.

Genus *Herpeton*, page 60, is placed in the division of the Colubrinæ with ungrooved teeth. This was done in accordance with the statement of Dr. Günther to that effect, made in the Annals and Magazine of Natural History. Dr. Boulenger informs me by letter that the last maxillary tooth is grooved as stated by Jan, in which I have followed him in Proceeds. Amer. Philos. Soc., 1887, 494.

The species included in the above enumeration are distributed into families, follows:

	Genera.	Spec
BATRACHIA.		
Urodela:		
Amblystomidæ	1	
Plethodontidæ	4	
Desmognathidæ	1	
Caeciliidæ	4	
Anura:		
Bufonidæ	5	
Rhinophrynidæ	1	
Scaphiopidæ	1	
Hylidæ	9	
Cystignathidæ	10	
Engystomidæ	1	
Phryniscidæ	2	
Dendrobatidæ	1	
Ranidæ	2	
REPTILIA.		
Crocodilia:		
Crocodilidæ	2	
Testudinata:		
Cistudinidæ	1	
Emydidæ	3	
Cinosternidæ	2	
Chelydridæ	2	
Cheloniidæ	1	
Sphargididæ	1	
Lacertilia:		
Geconidæ	6	
Eublepharidæ	2	
Anolidæ	1	
Iguanidæ	15	
Xenosauridæ	1	
Helodermidæ	1	
Anguidæ	5	
Xantusiidæ	1	
Teiidæ	5	
Scincidæ	4	
Gymnophthalmidæ	2	
Anelytropidæ	1	
Chirotidæ	1	
Ophidia:		
Stenostomidæ	2	
Typhlopidæ	4	
Pythonidæ	1	
Boidæ	5	
Charinidæ	1	
Nothopidæ	1	
Colubridæ	73	
Calamarinæ	26	
Coronellinæ	8	
Scytalinæ	7	
Colubrinæ	13	
Dipsadinæ	3	
Leptognathinæ	3	
Dryophidinæ	1	
Homalopsinæ	12	
Elapidæ	1	
Hydrophidæ	1	
Crotalidæ	9	
Total batrachia and reptilia	197	

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[Names in italics are synonyms.]

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BULLETIN

OF THE

UNITED STATES NATIONAL MUSEUM.

No. 33.

CATALOGUE OF MINERALS AND SYNONYMS ALPHABETICALLY ARRANGED FOR THE USE OF MUSEUMS.

BY

T. EGLESTON, Ph. D.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1889.

Department of the Interior:
U. S. NATIONAL MUSEUM.

— Serial Number 44 —

BULLETIN

OF THE

NITED STATES NATIONAL MUSEUM

No. 33.

PUBLISHED UNDER THE DIRECTION OF THE SMITHSONIAN INSTITUTION.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1889.

ADVERTISEMENT.

This work (Bulletin No. 33) is the forty-fourth of a series of papers intended to illustrate the collections of natural history and ethnology belonging to the United States, and constituting the National Museum, of which the Smithsonian Institution was placed in charge by the act of Congress of August 10, 1846.

It has been prepared at the request of the Institution, and printed by authority of the honorable Secretary of the Interior.

The publications of the National Museum consists of two series—the Bulletins, of which this is No. 33, in continuous series, and the Proceedings, of which the tenth volume is now in press.

The volumes of Proceedings are printed, signature by signature, each issue having its own date, and a small edition of each signature is distributed to libraries promptly after its publication.

From time to time the publications of the Museum which have been issued separately are combined together and issued as volumes of the Miscellaneous Collections. These are struck off from the stereotype plates from which the first edition was printed, and in this form are distributed by the Smithsonian Institution to libraries and scientific societies throughout the world. Volume 13 of these collections includes Bulletins 1 to 10 inclusive; volume 19, volumes 1 and 2 of the Proceedings; volume 22, volumes 3 and 4 of the Proceedings; and volume 23, Bulletins 11 to 15 inclusive.

Full lists of the publications of the Museum may be found in the current catalogues of the publications of the Smithsonian Institution.

Papers intended for publication in the Proceedings and Bulletins of the National Museum are referred to the Committee on Publications, composed as follows: T. H. Bean, A. Howard Clark (editor), Otis T. Mason, Leonhard Stejneger, Frederick W. True, and Lester F. Ward.

SPENCER F. BAIRD,
Secretary of the Smithsonian Institution.

SMITHSONIAN INSTITUTION,
Washington, January 7, 1887.

CATALOGUE

OF

MINERALS AND SYNONYMS.

BY

T. EGLESTON, Ph. D.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1887.

PREFACE.

This catalogue was commenced in the year 1867 for use in arranging the collections of the School of Mines of Columbia College, but after many months' labor, when the work was nearly completed up to that date, it was abandoned on account of the press of other duties. The collections have since that time increased to such an extent that the necessity of a Museum catalogue has impressed itself upon me many times, but other duties prevented my taking it up. In the last year, however, having occasion to make some investigations and finding it almost impossible to get at the different synonyms of the various minerals on account of the imperfections of the indices of the various works, the work was taken up again and finished.

It was found that the progress of the science since 1867 had been so great that the work previously done had to be altogether abandoned, so that all that is left of it is the general plan. It is hardly to be hoped that this catalogue is without errors, or that every name which has been published has been found. There are, however, several thousand more names contained in it than in any other published index.

In doing the work there have been consulted first of all the collections of the School of Mines, and also the following works:

(1) Dana's System of Mineralogy. New York, 1885.
(2) Dana's first, second, and third Supplements. New York, 1885.
(3) American Journal of Science, 1880 to 1885.
(4) Elemente der Mineralogie. Naumann. Tenth edition. Leipsic. 1877.
(5) Cours de Minéralogie. Delafosse. 3 vols. Paris, 1862.
(6) Traité de Minéralogie. Dufrenoy. 5 vols. Second edition. 1859.
(7) Websky die Minerale Species. Breslau, 1868.
(8) Readwin's Index Mineralogy. London, 1867.
(9) Bristow's Glossary Mineralogy. London, 1861.
(10) Plattner's Blowpipe Analysis. New York, 1873.
(11) Cleaveland's Mineralogy. Second edition. 1822.
(12) The Bulletin de la Société Minéralogique de France.
(13) Zeitschrift für Krystallographie und Mineralogie. 1877 to 1886.
(14) Mohs's Grundriss der Mineralogie. Dresden, 1822.
(15) Haidinger's Translation of Mohs. Edinburgh, 1825.
(16) Mineralogical Magazine. London, 1877 to 1884.

None of these have been found, after careful observation, to have had a complete index. The need of such a collection of synonyms has been such a necessity in the management of the collection of the School of Mines that it is hoped it will be found to be useful in other museums.

The names of the species have been printed in capitals, those of [illegible] in italics, and those of synonyms in ordinary type. As

far as possible the name of the authority for the species has been given in italics. The synonyms under each species have been divided into classes where that is necessary, and then arranged alphabetically for convenience in referring to them. The symbols representing the composition of the minerals have been given according to the new system, as that seems mostly to accord with the modern progress.

It would not have been possible for me, with all my other duties, to have done this work without the very careful and zealous assistance of Mr. A. J. Moses, instructor in mineralogy of the School of Mines, and the active co-operation of my assistant, Mr. Struthers, and to these gentlemen I gratefully acknowledge my indebtedness.

THOS. EGLESTON.

SCHOOL OF MINES, COLUMBIA COLLEGE,
New York, December 1, 1886.

LIST OF ABBREVIATIONS.

uthenticated species are printed in **LARGE CAPITALS** and species in *italics*. The synonyms follow in alphabetical order, r species important varieties are printed in SMALL CAPITALS, r synonyms. No attempt has been made to prove that the *italics*, which follow the various synonyms, are those of the users of such synonyms.

llowing abbreviations are used:

ildg.), Peter C. Abildgaard.
orgius Agricola.
., Albertus Magnus.
lchemists.
lyssus Aldrovandus.
ger.
stotle.
rooke.
erg.), Tobernus Bergmann.
J. Bernhardi.
Berthier.
. Berzelius.
S. Beudant.
W. Blomstrand.
Blum.), J. F. Blumenbach.
Bonvoisin.
C. Boulanger.
mte de Bournon.
ssing.), J. B. J. D. Boussingault.
ith.), A. Breithaupt.
r David Brewster.
J. M. Brochante de Villiers.
Brongniart.
rban F. B. Brückmann.
J. Chapman.
rker Cleaveland.
ola Covelli.
— Croerning.
xel von Cronstedt.
José Bonifacio D'Andrada e

A. J. Desalliers D'Argenville.
guste Daubrée.
mouth.), J. C. Delamétherie.
A. Des Cloizeaux.

Dioscor. (*Diosc.*), Pedanius Dioscorides.
Dolom., D. de Dolomieu.
Domeyk., I. Domeyko.
Dufr. (*Duf.*, *Dufren.*), A. Dufrénoy.
Ekeb., A. G. Ekeberg.
Emm., E. Emmons.
Emmerl., L. A. Emmerling.
Engl., English.
Erdm., A. Erdmann.
Esm., M. Esmark.
Forchh., Johan Georg Forchhammer.
Forst., J. R. Forster.
Fr., French.
Freies., J. C. Freiesleben.
Gerh., C. A. Gerhard.
Germ., German.
Gesn., Conradi Gesner.
Glock., E. F. Glocker.
Gmel., J. F. Gmelin.
Grev., Charles Greville.
H., L'Abbé Haüy.
Hagem., G. Hagemann.
Haid., Wm. Haidinger.
Hartm., C. F. A. Hartmann.
Haus. (*Hausm.*), J. F. L. Hausmann.
Hebr., Hebrew.
Henck., J. Fr. Henckel.
Herm., Rudolph Herrmann.
Herod., Herodotus.
Herrg., Christiano Herrgen.
Hessenb., Fr. Hessenberg.
Hising., W. Hisinger.
Hofm., C. A. S. Hofman.
Holmb., H. J. Holmberg.
Humb., F. W. H. A. von Humboldt.

Huys., August Huyssen.
Igels., L. J. Igelström.
Ital., Italian.
Jack., C. T. Jackson.
James. (*Jam.*), R. Jameson.
Johnst., J. F. W. Johnston.
Jord., J. L. Jordan.
Karst., D. L. G. Karsten.
Kenng., G. A. Kenngott.
Kerst., C. Kersten.
Kirw., R. Kirwan.
Klapr., M. H. Klaproth.
Koksch. (*Koks.*), N. von Kokscharof.
Lamp., W. A. Lampadius
Lat., Latin.
Leonh., C. C. Leonhard.
Leymer., Alexandre Leymerie.
Libav., Andr. Libavius.
Lind. (*Lindstr.*), G. Lindström.
Linn., C. Linnæus.
M., W. H. Miller.
Macgr., W. Macgregor.
Macq., L. C. H. Macquart.
Mask., N. S. Maskelyne.
Men., G. Meneghini.
Mex., Mexican.
Mitch., James Mitchell.
Mong., J'André Mongez.
Mont., Teodoro Monticelli.
Nap., Charles A. G. Napione.
Naum., C. F. Nauman.
Nes., Julius Nessler.
Non., ——— Nonnull.
Nord. (*Nordensk.*), N. A. E. Nordenskiöld.
Nutt., Thomas Nuttall.
Pell., Bertrand Pelletier.
Pers., Persian.
Petr., Pietro Petrini.
Pharm., Pharmacopœia.
Phil., W. Phillips.
Plat., C. F. Plattner.
Plin., C. Pliny.
Rado., Octave Rodoszkovski.
Ramm., C. F. Rammelsberg.
Rashl., Phillip Rashleigh.
Razou., Grégoire de Razoumovski.
Reich., ——— Reichenstein.
Retz., A. J. Retzius.
Roche., ——— Rochefoucauld.
Romano., A. Romanovski.
Salv., G. Salvetat.
Sandb., Fridolin Sandberger.
Saus., H. B. Saussure.
Scac., A. Sacchi.
Schafh., Carl E. Schafhautl.
Scheer., Th. Scheerer.
Schnei., R. Schneider.
Schönb., Chris. Friedrich Schönbein.
Schum., H. C. Schumacher.
Severg., Basil Severgin.
Seyb., Henry Seybert.
Shep., C. U. Shepard.
Span., Spanish.
Strom., Fr. Stromeyer.
Svan., Lars Fredrik Svanberg.
Tesch., J. E. Teschemacher.
Theoph., Eresius Theophrastus.
Thom., T. Thomson.
Tromm., Johann Bart Trommsdorf.
Tscher., Gustav von Tschermak.
Ull., J. C. Ullmann.
Vauq., Louis Nicholas Vauquelin.
Vitruv., Marcus Vitruvius Pollio.
Von Bonsd., P. A. von Bonsdorff.
Von Kob., Fr. von Kobell.
Von Walters. (*von Walt.*), W. Sartorius von Waltershausen.
Von Zeph., Victor von Zepharovitch.
Wacht., T. Wachtmeister.
Wall., J. G. Wallerius.
Walm., E. Walmstedt.
Weib., Paul Chr. Weibye.
Weis., A. Weisbach.
Wern., A. G. Werner.
Wollast., William Hyde Wollaston.
Woodw., J. Woodward.
Zink., J. C. L. Zinken.

LIST OF ERRATA.

.chtarandit. See Helvite.
IITE. Omit Retzbanyite.
.lbus fibrosus, capillaris, etc. latrolite.
.lgamatolite. See Pyrophyl-

› should be in capitals as a ıct species.
›menstein and Amazonit are ›line.
IIBOLE. Omit Glassy Actin-

IIBOLE. Omit Wallerian.
rous carbonate of copper. lysorin.
nium. Read Antimonium in names near bottom.
›dite is Monoclinic.
al cobalt. See Smaltite.
.uralite. See Iolite.
Axatomous spar. See Apo-ite.
:erosite is Pyrite.
TE. Omit Spath sélénitеux; baryt; strangenspath; spath ıt aéré.
astite. See Pyroxene.
›rk and Bergleder. See Pilo-

erzelianite. See Beryl.
erzeline, Necker. Near Leucite.
›in is Pumice.
TE. Omit Rhombohedral talc

thcobalterz is Smaltite.
UTOFERRITE, *Frenzel.* Bi_3 $_4O_{17}$.
luestone, a sulphide of Zn, Pb, ıtc.
ad kohle, not Mineral coal.
Bolovérite. See Anthophyl-

ew obsidian is Pélé's hair.

Page.
38. **Carbonate de soude** is **Trona.**
43. **Chalkodite** is Stilpnomelane.
43. **Chantonite,** *Shep.*, is a meteoric mineral.
43. *Cheleutite* is Smaltite.
44. **CHLORITOID.** Omit Salmite.
46. **CHRYSOLITE.** Omit Olivine titanifère.
47. **CIMOLITE.** Omit Terre sigillée.
47. **CIRROLITE.** $Al_4Ca_{12}P_6O_{21}+3\ H_2O$.
47. Omit **Clarus hyalinus.** See Zircon.
48. **Coal, boghead,** not Mineral coal.
55. Omit **Decacatritylene and Decatyline.**
55. **DESCLOIZITE** is Hexagonal.
57. **DOLOMITE.** Omit Rauchkalk.
58. Omit *Durangite, Brush.*
58. *Duxite* is C 78 %, H 8 %, O 13 %, approx.
59. **Earthy sulphide of silver** is Argentite.
59. Omit **Einfach arsenik cobalt.** See Arsenical cobalt.
59. **Eisenknebelite** is Knebelite.
60. **Elædite** should be Elæolite.
62. Omit **Erythronium.** See **Vanadinite.**
63. **Euzeolith,** not Stilbite.
67. **FLUOCERITE.** Omit **Basisches fluocerium.**
67. **Fluocerium basisches** is Fluocerine.
68. Omit **Fossiles harz.** See Krantzite.
68. Omit **Fournelite.** See Tetrahedrite.
70. *Gedanite.* C 81.01 %, H 11.41 %, O 7.33 %, S .25 %.
70. Omit *Gelberde.*
72. **Glassy actinolite** is Epidote.
72. **GOLD.** Omit Rhodium.
73. **GOETHITE.** Omit Pisiform iron ore.
74. **Grenat blanc** *calcaire.* Read *calciné.*
75. **GYPSUM.** Omit Niviforme.
78. **HEMATITE.** Omit Magnesian iron ore.

&c

Page.
83. **Hypostilbite.** Omit Pufferite, *Bukeisen.*
84. **IOLITE.** Omit Awialite.
84. **IRON.** Omit Kamacite and Partschite.
88. **Kamacite** is Chamasite.
88. **KAOLINITE.** Omit Microvermiculite.
89. *Kies thallium haltender* is Pyrite.
90. **Kobaltspath** is Sphærocobaltite.
91. **KRENNERITE.** Omit Tellure aurifère et plombifère.
94. **Lead oxychloriodide** is Schwartzembergite.
99. **Magnesia,** not Wolframite.
101. **Manganese,** not Wolframite.
103. **MARCASITE.** Omit Ballesterosite.
105. *Melanosiderite* $Fe'''_8SiO_{14}+6\ H_2O$.

Page.
107. *Mica* (Group.). For œil de chat read Or de chat.
109. **MINERAL COAL.** Omit Papierkohle.
110. **MINERAL COAL.** Omit TORBANITE and its synonyms.
112. **MUSCOVITE.** Omit Talcite.
114. **Natrosiderite** is Acmite.
118. **Ochre, chrome** is Chrome ochre.
120. **Or blanc dendritique** is Tellurium.
124. **Paranthine,** not Wernerite.
125. **Péridot titanifère** is Titaniferous chrysolite.
126. **PETZITE.** Omit Bunsenin.
130. Omit **Pitchlike zinc blende.** Uraninite.
140. **PYRRHOARSENITE.** (Mn, Mg)$_3$(As, Sb)$_2$O$_8$.
166. **Suber montanum, not Xylotile.**

CATALOGUE OF MINERALS.

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e Arite.
See Clinoclasite.
See Gismondite.
, near Crocidolite.
See Wad.
See Chabazite.
See Chabazite.
See Chabazite.
TE. Ag_2S. Orthorhombic.
it, *Kenng.*; schwefelsilber; lphuret.
Dufr., near Breislakite.
ite. See Epidote.
See Manganite.
e Quartz.
ndischer. See Orthoclase.
See Quartz.
x pellucida. See Quartz.
s. See Quartz.
See Dioptase.
See Epidote.
See Acmite.
An uncertain arsenate and ate of lead.
in. See Barite.
See Tourmaline.
ite. See Vesuvianite.
, *Russian*. Contains SiO_2, Fe_2O_3, CaO, MgO, H_2O. Mas- pseudomorphous.
it. See Helvite.
ite. See Achtaragdite.
rseniate of copper. See Oli-

ismuth. See Aikinite.
ismuth glance. See Aikinite.
boulangerite. See Boulan-

livenore. See Olivenite.
re. See Aikinite.
tone. See Scolecite.
See Aikinite.
nic. See Carbonic acid.
monieux. See Cervantite.
nieux. See Arsenolite.
acique. See Sassolite.

Acide borique. See Sassolite.
Acide carbonique. See Carbonic acid.
Acide chlorhydrique. See Hydrochloric acid.
Acide hydrochlorique. See Hydrochloric acid.
Acide hydro-sulfurique. See Sulphuretted hydrogen.
Acide marin. See Hydrochloric acid.
Acide molybdique. See Molybdite.
Acide muriatique. See Hydrochloric acid.
Acide sulfhydrique. See Sulphuretted hydrogen.
Acide sulfureux. See Sulphurous acid.
Acide sulfurique. See Sulphatite.
Acide tellurique. See Tellurite.
Acide titanique. See Rutile, Octahedrite, Brookite.
Acide tungstique. See Tungstite.
Acido vitriolo saturata. See Gypsum.
Acid sulphuric. See Sulphuric acid.
Acid sulphurous. See Sulphurous acid.
Acidum boracis. See Sassolite.
ACMITE. $Fe'''(SiO_3)_2Na$. Monoclinic. Achmit, *Svröm*; akmit, *Germ.*
Acnite. See (†).
Açorite. See Azorite.
Acrusite. See Cerussite.
Actinolite. See Amphibole.
Actinolithe. See Amphibole.
Actinote. See Amphibole.
Actynolite. See Amphibole.
Adamant. See Corundum.
Adamantine spar. See Corundum.
Adamas. See Diamond and Corundum.
Adamas siderites. See Corundum.
Adamine. See Adamite.
ADAMITE. $Zn_2(OH)AsO_4$. Orthorhombic. Adamine, *Friedel.*
Adamsite. See Muscovite.
Adelfolit. See Adelpholite.
Adelpholite. See Zircon.
ADELPHOLITE. Ta_2O_5, Cb_2O_5, FeO, MnO, 10 H_2O. Tetragonal. Adelfolit, *Nord.* Adelpholith.

Adelpholith. See Adelpholite.
Adhesive clay. See Clay.
Adhesive slate. See Clay.
Adinole. See Albite.
Adipocerite. Fatty substance of peat mosses.
Adular. See Orthoclase.
Adulaire. See Orthoclase.
Adularia. See Orthoclase.
Aedelforsite. See Edelforsite.
Aedelforsite. See Laumontite.
Aedelite. See Prehnite.
Aegirine. See Aegirite.
AEGIRITE. $Fe'''Fe''CaMg(SiO_3)_6$. Aegirin, *Esmark*; Ægyrine; Ægyrite.
Aegyrina. See Aegirite.
Aegyrite. See Aegirite.
Aenigmatite. See Koelbingite.
Aerated barytes. See Witherite.
Aërinite, Von Lasaulx. Blue heterogeneous mass of silicates.
Aëriform carbonic acid. See Carbonic acid.
Aëriform muriatic acid.
Aëriform sulphuric acid. See Sulphatite.
Aeroga nativa. See Malachite.
Aeroides. See Beryl.
Aerolithes. See Meteorites.
Aerosite. See Pyrargyrite.
Aerugite. $(NiO)_3As_2O_5$ (?).
Aerugo. Copper rust.
Aes caldarium rubro-fuscum. See Cuprite.
ÆSCHYNITE, *Berz.* $R_3Ti_5Cb_4O_{29}$. Orthorhombic.
Aes cyprium. See Copper.
Aes rude plumbei coloris. See Chalcosite.
Aetheriastite. See Wernerite.
Aftonite. See Aphthonite.
Aftonite. See Tetrahedrite.
Agalmatolite. See Pinite, Biharite, Talc, and Pyrophyllite.
Agalmatolithe. See Pinite, Biharite, Talc, and Pyrophyllite.
Agaphite. See Turquois.
Agaric mineral. See Calcite.
Agate. See Quartz.
Agate grossière. See Quartz.
Agate jaspée ou mousseuse. See Quartz.
Agate mousseuse. See Quartz.
Agate orientale. See Quartz.
Agate périgone. See Quartz.
Agate rubanée. See Quartz.
Agate terreuse. See Quartz.
Agate versicolore. See Quartz.
Agate zonaire. See Quartz.
Agates fere pellucida. See Quartz.
Agathe cornaline. See Quartz.
Agile ocreuse jaune. See Melinite.
Aglaite. See Cymatolite.
Agnesite. See Bismite.
Agnesite, B. & M. Carbonate of bismuth, *Macgi.*
Agricolite. $Bi_8Si_9O_{30}$. Monoclinic.
Agustite. See Apatite.
Aigue-marine. See Beryl.
Aigue marine de Sibérie. See Beryl.
AIKINITE. $PbCuBiS_3$. Orthorhombic. Acicular bismuth; acicular bismuth glance; acicular ore, *Jameson*; aciculite, *Nicol*; aikinite, *Chap.*; belonit, *Glock.*; bismuth sulfo-plumbo-cuprifère; bismuth sulfuré plumbo-cuprifère, *H.*; cupreous bismuth; Nadelerz, *Mohs*; needle ore, *Jameson*; patrinite, *Haid.*; plumbo cuprifère, cupriferous sulphuret of bismuth, *Phil.*; retzbanyite.
AIMAFIBRITE. $H_{14}Mn_{13}As_4O_{30}+6H_2O$. Orthorhombic. Hæmafibrite.
Aimant. See Magnetite.
Aimant de Ceylon. See Tourmaline.
Aimatolite. $H_8Mn_7As_2O_{16}+3H_2O$. Hexagonal. Haimatolith.
Ainalite. See Cassiterite.
Ainigmatit. See Aenigmatite.
Air hépatique. See Sulphuretted hydrogen.
Air puant. See Sulphuretted hydrogen.
Ajkite. Near Succinite.
Akanthit. See Acanthite.
Akanticone. See Epidote.
Akmit. See Acmite.
Akontite. See Arsenopyrite.
Akontite. See Leucopyrite?
Aktinolith. See Amphibole.
Alabandicus. See Garnet.
Alabandin. See Alabandite.
ALABANDITE. MnS. Isometric. Alabandine, *Beud.*; braunsteinblende, *Leonh.*; blumenbacht, *Breith.*; braunsteinblende, *Blumenbach*; glanzblende, *Mohs*; hexahedral glanzblende; manganblende, *Blumenbach*; manganese blende; manganese phid; manganese sulfuré, *H.*; manganese sulphuret; manganes

DITE—Continued.
tic manganese blende, *Jameson*;
elmangan, *Germ.*; schwarze
Müller & Reich.; schwarzerz,
sulphuret of manganese, *Phil-*

. See Gypsum.
marble. See Calcite.
stone. See Calcite.
agatato. See Gypsum.
es. See Calcite.
m. See Gypsum.
See Pyroxene.
$[(Ag_4Cu_2)\ Pb]\ As.\ Bi_2S_3$.
e Kalinite.
. See Shale.
+Kieselerde. See Chryso-

Near Haüynite.
loid. See Alunite.
x. See Kalinite.
efer, *Werner.* See Shale.
n. See Löwigite.
n. See Alunite.
s. See Calcite.
igato. See Gypsum.
See Gypsum.
ntique. See Calcite.
ilcaire. See Calcite.
ypseux. See Gypsum.
il. See Albertite.
obb. Near Asphaltum. Albert
nelan asphalt, *Wetherell.*
e Apophyllite.
Gahn & Berz. $NaAlSi_3O_8$. Tri-
Alkalifeldspath; crumbling
r; feldspar siliceous; feldspar
feldspath pt., *De Lisle*; felt-
vit pt., *Wall.*; heterotomous
r, *Mohs*; kieselspath, *Haus.*;
blätteriger feldspath, *Heden-*
natronfeldspath; prismatic
r, *Mohs*; schorl blanc pt., *De*
siliceous feldspar; soda feld-
tetartin, *Breit.*; tetarto pris-
eldspar, *Mohs.*
INE.
ANDITE, *Brooke.*
ERITE, *Breit.*; hyposklerit.
NE; mondstein.
Breit.; oligoclase-albite, *Scheer.*
E, *Phil.*; periklin, *Breit.*
RITE, *Thom.*
, *Beud.*
FELSITE; albite-felsite; albite-
ry.

ALBITE—Continued.
AMAUSITE, *Gerh.*; amantite; amantice, *Duf.*; amantite, *Duf.*; amanzite, *Duf.*; felsite.
DIORYTE.
GRANULYTE; weissstein.
PETROSILEX; helleflinta pt.; pontellarite; tschermakite; cornubianite.
SPILYTE.
ZYGADITE, *Breit.*
Albite-felsite. See Albite.
Albite-porphyry. See Albite.
Albitic felsite. See Albite.
Albitic granite. See Orthoclase.
Album cenereum rubrum. See Orthoclase.
Albus fibrosus, capillaris, etc. See Natrolite.
Alcali mineral See Natron.
Aleacion de plata con bismuto. See Chilenite.
Alexandrite. See Chrysoberyl.
Algadonite. See Algodonite.
Algamatolite. See Pyrophyllite.
Algerite, Hunt. Near Pinite.
ALGODONITE, *Field.* Cu_6As. Algadonite, copper, arsenical.
ALIPITE. $H_2(NiMg)_2Si_2O_9$. Aalizite; nickel silicate; pimelit, *Schmidt.*
Alisonite. See Galenite.
Alisonite. See Cuproplumbite.
Alisonite, Field. Cu_6PbS_4.
Alizite. See Alipite.
Alkali orientale impurum terrestre. See Thermonatrite.
Alkalifeldspath. See Orthoclase and Albite.
Alkaliskt. See Thermonatrite.
Allagite. See Rhodonite.
ALLAKTITE. $Mn_7As_2O_{12}+4H_2O$. Monoclinic.
ALLANITE, *Thoms.* $R_3'' R_2''' Si_3O_{12}$. Monoclinic. Anorthic melan ore, *Haid.*; anorthisches melan erz; bucklandit, *Levy*; cererine; cererite, *Brooke & Miller*; cerin, *Hising.*; cerine, *Hising. & Berzel*; cerium epidote; cerium oxide siliceux noir; crystallized gadolinite, *Allan*; epidote cérifère, *Gadolin*; prismatic cerium ore, *Jam.*; scotin; skotin; tantolith, *Breit.*; tantolit; vasite.
BAGRATIONITE, *Kokscb.*
ORTHITE, *Berz.*
ORTHOIDE.
PYRORTHITE, *Berz.*

ALLANITE—Continued.
URALORTHITE, *Herm.*
XANTHORTHITE, *Herm.*

Allanite. See Allanite.

ALLEMONTITE, *Haid.* $SbAs_3$. Hexagonal. Antimoine arsénifère; antimoine natif arsénifère, *H.*; antimonarsen, *Naum.*; antimony arsenical; arsenic antimonal; arsenical antimony, *Dana*, *Phillips*; arsenikantimon, *Hausm.*; arsenikspiessglanz, *Zippe*; arseniure d'antimoine, *Fr.*

Alley stone. See Aluminite.

Allochite. See Epidote.

Allochroite. See Garnet.

ALLOCLASITE. $R_4(AsBi)_7S_6$. Orthorhombic. Alloklas, *Tschermak*; glaucodot pt., *Breit.*; glaukodot.

Allogonite. See Herderite.

Alloklas. See Alloclasite.

Allomorphite. See Barite.

ALLOPALLADIUM. Pd_3. Hexagonal. Eugenesite; hexagonal palladium; palladium pt.; palladium selenie; selenpalladite, *Zinken*; selenpalladium, *Zinken.*

Allophan. See Allophane.

ALLOPHANE. $Al_2SiO_5+6H_2O$. Amorphous. Allophan, *Strom.*; ehujarit; elhuyarit, *Sack*; elhuyazite, *Fuchs*; kiesel aluminite; plomballophane; plumballophane, *Bombicci*; prilepite; riemanite; riemannit, *Breit.*; siliceous aluminite; skarbroït; sulfatallophane.

Allophane opal. See Schrötterite.

Allophite. $Al_4Mg_9Si_5O_{25}$. Microcrystalline.

Alloy of iridium and osmium. See Iridosmine.

Allumandite, Damour. Near Triphyllite.

Alum. See Aragonite.

Alumogenite, Breit. $ZnSO_4$?

Almandin. See Garnet.

Almandine. See Garnet.

Almandine garnet. See Garnet.

Almandine ruby. See Spinel.

Almandine spar. See Eudialyte.

Almandite. See Garnet.

Altaite. See Halotrichite.

Altanite. See Titanite.

Altaite. See [illegible]. PbTe. Isot; henryite, [illegible]; plomb tellurié; tellurblei, *Rose*; tellure de plomb; hexagonal tellurium; telluride of lead.

Alum. See Kalinite.

Alum ammonia. See Tschermigite.

Alum de Rome. See Löwigite.

Alum earth. See Shale.

Alum feather. See Halotrichite.

Alum haloid. See Alunite.

Alum iron. See Halotrichite.

Alum magnesia. See Pickeringite.

Alum manganese. See Apjohnite.

Alum potash. See Kalinite.

Alum rock. See Alunite.

Alum salt. See Kalinite.

Alum shale. See Shale.

Alum slate. See Shale.

Alum soda. See Mendozite.

Alum spath. See Alunite.

Alum stone. See Alunite and Löwigite.

Aiumen de Tolpa. See Alunite.

ALUMIAN, *Breit.* $Al_2S_2O_9$(?). Microcrystalline; alumina sulphate; thonerde Schwefelsäure.

Alumina. See Corundum.

Alumina and copper hyd., silico phosphate of.

Alumina and lime hyd., phosphate of.

Aiumina carbonate. See Hovite.

Alumina, cupreous phosphate of, Forbes.

Alumina fluate. See Fluellite.

Alumina fluosilicate. See Topaz.

Alumina garnet. See Garnet.

Alumina hydrate. See Diaspore.

Aiumina hydro-sulphate. See Aluminite.

Alumina mellate. See Mellite.

Alumina native. See Corundum.

Alumina phosphate. See Wavellite.

Alumina, saliferous hydrate of.

Alumina sulphate. See Alumian, Alunogen, Aluminite, Felsobanyite.

Alumina and lime phosphate.

Aluminate de Plomb avec eau de combinaison. See Plumbogummite.

Aluminate of glucina. See Chrysoberyl.

Alumine boratée. École de Mines, Paris, artificial?

Alumine fluatée alcaline. See Cryolite.

Alumine Hydratée de Beaux. See Beauxite.

Alumine silicifère.

Alumine hydro-phosphatée. See Wavellite.

Alumine magnésiée. See Spinel.
Alumine phosphatée. See Wavellite.
Alumine sous sulfatée. See Aluminite.
Alumine subphosphate. See Wavellite.
Alumine sous sulfatée alcaline. See Alunite.
Alumine sulfatée. See Alunogen.
Alumine sulfatée alcaline. See Kalinite.
Aluminilite. See Alunite.
ALUMINITE, *Haberle.* $Al_2SO_6+9\ H_2O$. Amorphous. Alley stone; alumina sulphate; alumine sous sulfatée; argile natif; hallite, *Dela.*; hydrosulphate d'alumine; native argile, *Kirw.*; reine thonerde, *Wern.*; subsulphate of alumina, *Phill.*; subsulphate of alumine; thonerde schwefelsäure; websterite, *Levy.*
Aluminous diallage. See Pyroxene.
Aluminous iron lime amphibole. See Amphibole.
Aluminous iron lime pyroxene. See Pyroxene.
Aluminous iron manganese amphibole. See Amphibole.
Aluminous lime magnesia iron pyroxene. See Pyroxene.
Aluminous lime magnesia pyroxene. See Pyroxene.
Aluminous magnesia lime amphibole. See Amphibole.
Aluminous magnesia lime iron amphibole. See Amphibole.
Aluminous marl.
Aluminous oxide of lead. See Plumbogummite.
Aluminous slate.
Aluminum fluorid. See Fluellite.
Aluminum ore. See Beauxite.
Alumocalcite. See Opal.
Alun. See Kalinite.
Alun ammoniacal. See Tschermigite.
Alun de plume. See Halotrichite.
Alun de Rome. See Alunite.
Alun magnesien. See Pickeringite.
Alun sodifère. See Mendozite.
ALUNITE, *Beud.* $KAl_3S_2O_{11}+3\ H_2O$. Hexagonal. Alaun haloid; alaunstein, *Wern.*; alaun spath, *Breit.*; alumen de Tolpa, *Gesner*; alum haloid; alum rock; alumine sous sulfatée alcaline, *Haüy.*; aluminilite, *Dela.*; alumstone, *Phill.*; alun de Rome pt., *H.*; lave altérée alunifère; pierre alumineuse; pierre alumineuse

ALUNITE—Continued.
de la Tolfa, *Fr.*; pierre d'alun; rhombohedral alun haloid, *Mohs*; romersk alunstein, *Wall.*; subsulphate of alumine and potash; thonerde schwefelsaure; ampelites alumineux.
Alunogen. See Mendozite.
ALUNOGEN. $Al_2S_3O_{12}+18\ H_2O$. Monoclinic. Davite?, *Mill*; halotrichite, *Brooke* and *Miller*; halotrichet pt., *Hausm.*; hydro trisulfate d'alumine, *Beud.*; keramohalit, *Glock.*; ogene, *Beud.*; schwefelsaure thonerde; soldanite, *Huot.*; solfatarite pt., *Shep.*; stypterit, *Glock.*; sulphate of alumina, *Phillips.*
Alurgite, Breit.; purple manganese mineral.
Alvite, Forbes and *Dahll.* SiO_2, Al_2O_3, Fe_2O_4YO, ThO_2, ZrO_2. Tetragonal.
AMALGAM, *Dana.* Ag_2Hg_3. Isometric. Amalgam d'argent; amalgam festes; amalgame natif d'argent, *La Metherie*; amalgam halbflüssiges; amalgam natif, *de Lisle*; argental mercury; argent amalgame, *Dufr.*; dodecohedral mercury, *Mohs*; mercure argental, *H.*; mercure argentif, *Haüy*; mercure argentifère; mercury amalgam; native alloy; native amalgam; natürlich amalgam; pellanatural, *Del Rio*; quicksilfwer amalgameradt med gediget silfwer, *Cronst*; silberamalgam, *Germ.*
Amalgame d'argent. See Amalgam.
Amalgame d'or. See Gold Amalgam.
Amalgame natif d'argent. See Amalgam.
Amalgam festes. See Amalgam.
Amalgam gold. See Gold Amalgam.
Amalgam halbflüssiges. See Amalgam.
Amalgam natif. See Amalgam.
Amansite. See Albite.
Amanthiforme diarseniate of copper. See Olivenite.
Amantice. See Albite.
Amarus. See Epsomite.
Amansite. See Albite.
Amantite. See Albite.
Amanzite. See Albite.
Amausite. See Albite.
Amazonenstein. See Orthoclase.
Amazonit. See Orthoclase.
Amazonstone. See Microcline.
Amber. See Succitine.
Amber black. See Mineral Coal.

AMBLYGONITE, *Breit.* Li Al PO_4 F. Tricliuic. Montebrasite, *Des Clois.*; prismatic amblygon spar, *Mohs.*

Amblystegite, vom Rath. SiO_2, FeO, MgO, Al_2O_3, CaO. Near Hypersthene. Orthorhombic.

Ambre. See Succinite.

Ambre jaune. See Succinite.

AMBRITE, *Hochstetter.* $C_{44}H_{66}O_5$ (?). Amorphous.

Ambrosine, Shep. Near Succinite. Amorphous.

Amesite. See Corundophilite.

Améthiste basaltine. See Apati

Améthiste basaltine. See Bery

Amethyst. See Quartz.

Amethyst, false. See Fluorite.

Améthyste orientale. See Corundum.

Amethystizontes. See Garnet.

Amethystoline. See Quartz.

Amethystoline, Brewst. Fluid in cavities of amethyst.

Amfithalit. See Amphithalite.

Amiant. See Amphibole and Serpentine.

Amianthe. See Amphibole and Serpentine.

Amianthöide. See Amphibole and Serpentine.

Amianthöide magnesite. See Brucite.

Amianthus. See Brucite.

Amianthus. See Amphibole and Serpentine.

Amiantöide. See Amphibole and Serpentine.

Ammiolite, Dana. CuO, Sb_2O_5, HgS. Antimoniato de cobre con cinabrio terroso. *Domeyko*; antiomonigsäures bleioxyd; antimonite de mercure antimonite of quicksilver, *Domeyko*; cinabrio subido; mercure antimoine; quicksilver antimonite.

Ammochrysos. See Mica.

Ammonalum. See Tschermigite.

Ammonalun. See Tschermigite.

Ammonia alum. See Tschermigite.

Ammonia-alum of the brown coal. See Tschermigite.

Ammonia and soda phosphate. See Stercorite.

Ammonia bicarbonate. See Teschemacherite.

Ammonia muriate. See Sal-ammoniac.

Ammonia phosphate. See Struvite.

Ammonia sulphate. See Mascagnite.

Ammoniac salt. See Sal-ammonia.

Ammoniakalaun. See Tschermigite.

Ammoniak, kohlensäures. See Teschermacherite.

Ammoniak salz. See Sal-ammoniac.

Ammoniak salz, Octaedrisches. See Sal-ammoniac.

Ammoniaque carbonatée. See Teschermacherite.

Ammoniaque muriatée. See Sal-ammoniac.

Ammoniaque phosphatée. See Struvite.

Ammoniaque sulfatée. See Mascagnite.

Amoibite. See Gersdorffite.

Ampelites alumineux. See Alunite.

Ampelitis. See Mineral coal.

Amphibol ähnliches min. von Waldheim. See Waldheimite.

Amphibolanthophyllite. See Descloizeaux's monoclinic anthophyllite.

AMPHIBOLE, *H.* R″SiO_3, R=Ca, Mg, Fe, or Mn. Monoclinic. Schörl pt., *Wall.*; skorl.

TREMOLITE, *Pini.* (magnesia-lime amphibole): Amphibole blanc, *Haüy*; amphibole blanche; asbestiform calamite; asbestiform tremolite; calamite; grammatite, *H.*; kalamit, *Wern.*; nordenskiöldit, *Kenng.*; peponite, *Dufr.*; sebesite, *Breit.*; raphilite, *Thom.*; raphilithe; tremolith, *Wern.*

NEPHRITE, *Wern.*; axe-stone; beilstein, *Wern.*; common jade; jade sciens, *Haüy*;—axinen?— de la Chine, *Haüy*: — nephretique, *Haüy*; — oriental; kidney stone; lapis indicus, *Aldrov.*; lapis nephriticus, *Clutius*; nierenstein; pierre de casse-tête?—de in?—nephretique, *d'Argen.*; pietra di hijada, *Span.*; pocuamu; pseudonephrite; punamustein; talcum nephriticum, *Linn.*; uncleavable adaphans,—nephrite spar, *Haid.*; white jade, *Damour*; you stone; yu.

ACTINOLITE (magnesia-lime-iron amphibole): Actinolithe; actinote, *H.*; actynolite, *Kirw.*; aktinolith; amphibole aciculaire; amphibole verte; glassy actinolite; rayonnante, *Saussure*; schorl vert du Zillerthal; shorl spar; strälskörl; strahlstein, *Wern.*; strahlstein körniger; zillerthite, *Dale.*

ANTHOLITE (magnesia-iron amphibole): Antholith pt.; anthophyllite, *Kenng.*; antolith.

AMPHIBOLE—Continued.

RICHTERITE (magnesia-lime-manganese amphibole): Hexagonite.

CUMMINGTONITE, *Dewey* (iron-magnesia amphibole): Anthophyllite pt.

DANNEMORITE, *Kenng.* (iron-manganese amphibole): Asbeferrite, *Igels.*; jern-och-manganoxidulrik hornblende, *Erdm.*

GRÜNERITE, *Kenng.* (iron amphibole): Pyroxene ferrugineux, *Grüner.*

ASBESTUS, *Kirwan* (*Ἀμίαντος λίθος, Dioscor*): Amiant; amianthe, *Broch.*; amianthöide, *Dela.*; amianthus; amiantöide; amiantus, *Plin.*; asbest, *Wern.*; asbestöide, *Vauq.* and *Macquart*; asbestos, *Kirwan*; bärgkoark, bärgkött; bergholz, *Wern.*; bergkork, *Cronst.*; breislakite, *Brocchi*; caro montana; carton de montaigne; carystine, *Hill*; cuir de montagne; cymatine; earth flax, *Woodward*; glassy asbestos; holzasbest, *Germ.*; kématine, *Dufr.*; kymatine, *Breit.*; lapis carystius, *Pausanias*; liége de montagne; linum vivum; lana montana; mountain cork;—leather;—paper;—pasteboard;—silk;—wood;—rock cork;—leather; salamander's hair; subér montanum; Venus's hair stone.

BYSSOLITE, *Saus.* (aluminous-iron pyroxene); Bissolithe; byssolithe, *Haus.*; byszolith.

BERGMASKITE, *Luchetti.*

EDENITE, *Breit.* (aluminous-magnesia-lime amphibole).

SMARAGDITE, *Saus.*: Corsilyte, *Pinkerton*; diallage green; diallage vert pt., *H.*; diallagon, *Ull.*; euphotide; green diallage pt., *Haid.*; verde di Corsica duro, *in the arts.*

PARGASITE and HORNBLENDE (aluminous-magnesia-lime-iron amphibole): Amphibole alumineuse;—basalticus;—carinthinus;—diastaticus;—ferrosus;—granuliforme;—macrodiagonalis;—medius;—noire;—pargasites;—saxosus; amphibolit, *Breit.*; basaltes pt.; basaltic hornblende; basaltische hornblende, *Wern.*; breadalbaneite; bolus particulis squamosis pt., *Cronst.*; carinthine, *W.*; carinthinite; coccolithe de Finland; corneous crystallisatus pt.? —fissilis? —solides pt.; diastallite; diastatite, *Breit.*; hemiprismatic augite spar, *Mohs*; hemiprismatischer amphibole, *Breit.*; hemiprismatites wallerianus, *Breit.*; hornbärg; hornblende basaltic;—fibrous; irestone; karinthin; keraphyllite; kératophyllite; kérophyllite; mornit; napoleonite; noble-hornblende; schorl argileux pt., *de Lisle*; schorl opaque rhomboidal pt., *de Lisle*; skiörl pt., *Wall.*; skörl pt.; syntagmatit, *Ramm.*; wallerian, *Breit.*

NORALITE, *Dana* (aluminous-iron-lime amphibole).

GAMSIGRADITE (aluminous-iron-manganese amphibole): Fimazyte.

BREISLAKITE: Cyclopeite.

AMPHIBOLE ROCKS.

APHANYTE: Amphibole compacte; corneine; diabase; dioryte; euphotide; fasciculite; gabbro; grünstein; hornblende slate; hydrous anthophyllite, *Thom.*; sienite; syenite.

PHAACTINITE, altered amphibole.

Amphibole aciculaire. See Amphibole.

Amphibole alumineuse. See Amphibole.

Amphibole basalticus. See Amphibole.

Amphibole blanc. See Amphibole.

Amphibole blanche. See Amphibole.

Amphibole carinthinius. See Amphibole.

Amphibole compacte. See Amphibole.

Amphibole diastaticus. See Amphibole.

Amphibole granuliforme. See Amphibole.

Amphibole macrodiagonalis. See Amphibole.

Amphibole medius. See Amphibole.

Amphibole noire. See Amphibole.

Amphibole pargasites. See Amphibole.

Amphibole saxosus. See Amphibole.

Amphibole verte. See Amphibole.

Amphibolite. See Amphibole.

Amphibolus ferrosus. See Amphibole.

Amphigène. See Leucite.

Amphigenyte. See Leucite.

Amphilogite. See Muscovite.

Amphithalite. $Al_2O_3, P_2O_5, H_2O, (MgCa)O$. Massive. Amfithalit, *Igelström.*

Amphodelite. See Anorthite.

Anagenite. See Chrome ochre.

Analcime. See Analcite.

Analcime carnea. See Sarcolite.

us sulphate of soda and lime.
lauberite.
us sulphate of zinc. See Zin-
.
Ag_9Sb. Macfarlanite.
ITE, *Haid.* $CaCO_3$. $FeCO_3$. X
IgC_2O_6). Hexagonal. Brown
chaux carbonatée ferro-man-
ifère; dolomite pt.; forbesite;
mes kalkhaloid, *Mohs*; parato-
lime haloid, *Mohs*; pearl spar
hwand; rosszahn; spar brown;
lin; tantoklin, *Breit.*; wand-
Styrian miners.
ERGITE, *B.* and *M.* $Ni_3As_2O_8$
O. Monoclinic. Arseniate of
; arseniksaures nickel; nicco-
lciforme, *Cronst.*; nickel arseni-
laüy; nickel beschlag; nickel
; nickel blüthe, *Haus.*; nickel
Dana; nickel ochre, *Kirwan*;
cker; nickel ocre; ochra nic-
oxide of nickel.
, *Brögger.* Near Samarksite.
$O_7+2\frac{1}{2}H_2O$. Orthorhombic.
na. Near Lepidomelane.
See Tetrahedrite.
See Biotite.
melane ore. See Allanite.
ches melan erz. See Allanite.
HITE, *Rose.* $CaAl_2Si_2O_8$. Tri-
Anorthöit. Anorthotomous
ar, *Mohs*; biotino, *Mont.* and
christianite, *Des.*; cristianite;
ite, *Thom.*; icespar; kalkfeld-
lime feldspar; tankit, *Breit.*;
anite, *Genth.*; thiorsorite; tjor-
; zeolite de Borkhult.
TE, *Bourn.*: Matrix of corun-
Bourn.
ELITE, *Nordensk.*: Diploit,
; latrobite, *Brooke*; lepolith,
; lepolite; scapolite from Tun-
Walmstedt.
Altered anorthites.
E, *Nord.*: Lindsayite, *Komonen.*
CKITE, *Nordensk.*: Sundoikite,
sundvigite; sundvilkite; sund-
t.
t. See Anorthite.
omops felspar. See Anorthite.
mmit. See Anthophyllite.
. See Amphibole, Anthophyl-
Kupfferite.
n. See Anthophyllite.

ANTHOPHYLLITE. $Fe''Mg_3Si_4O_{12}$. Orthorhombic. Amphibole anthophyllit, *Desc.*; anthogrammit; anthophyllit strahliger; antholite; antholith, *Breit.*; antophyllit, *Karst.*; brown asbestos; gedrite; konlibinite; prismatic schiller spar, *Mohs.*

Anthophyllite, blättriger. See Enstatite.

Anthophyllite, hydrous. See Amphibole.

Anthophyllite strahliger. See Anthophyllite.

ANTHOSIDERITE, *Hausm.* $Fe'''_4Si_8O_{24}+2H_2O$.
ESCHWEGITE, *Dufrenoy.*

Anthracitic diamond. See Diamond.

Anthracites. See Mineral coal.

Anthracitus. See Garnet.

Anthracolite. See Calcite.

Anthraconite. See Calcite.

Anthracoxen. See Anthracoxenite, Schlabite.

ANTHRACOXENITE, *Dana.* $C_{40}H_{38}O_{714}$. Anthracoxen pt., *Reuss*; anthrakoxen.

Anthrakolite. See Calcite.

Anthrakonit. See Calcite.

Anthrakoxen. See Anthracoxenite.

Anthratolith. See Calcite.

Anthratonit. See Calcite.

Anthrax. See Corundum, spinel.

Anthrazit. See Mineral Coal.

Antiedrite. See Edingtonite.

Antigorite. See Serpentine.

Antillite. Near Serpentine.

Antimochre. See Cervantite, Stibiconite, Volgerite.

Antimoine, arsenical. See Allemontite.

Antimoine arsénifère. See Allemontite.

Antimoine blanc. See Senarmontite, Valentinite.

Antimoine gris. See Stibnite.

Antimoine hydro-sulfuré. See Kermesite.

Antimoine muriatique. See Valentinite.

Antimoine natif. See Antimony.

Antimoine native arsénifère. See Allemontite.

Antimoine oxidé. See Valentinite, Senarmontite, and Kermesite.

Antimoine oxidé sulfuré. See Kermesite.

Antimoine oxydé. See Valentinite.

ıs acid. See Cervantite.
NY. Sb. Hexagonal. Antiıatif, *Fr.*; antimon rhomboe-ı; antimony dodecahedral, gediegen antimon, *Germ.*; ge-ıpeissglanz; gediget spitsglass, native antimony, rhombohe-imony, *Mohs*; spiesglas, *Wern.*
arsenical. See Allemontite.
baryt. See Valentinite.
blende. See Kermesite.
bloom. See Valentinite.
dodecahedral. See Anti-

glance axifrangible. See nite.
glance axotomous. See nite.
glance prismatic. See Syl-

glance prismatoidal. See ·.
glance. See Stibnite.
gray. See Jamesonite and ·.
hypochlorite. See Hypo-·.
nickeliferous gray. See Ull-·.
ochre. See Cervantite and te.
octahedral. See Dyscrasite.
oxyd. See Senarmontite and nite.
plumose. See Jamesonite.
prismatic. See Dyscrasite.
red. See Kermesite.
rhombohedral. See Anti-

silver. See Dyscrasite.
sulphid. See Stibnite.
sulphuret. See Stibnite.
white. See Senarmontite and nite.
eiglanz. See Galenite.
See Amphibole.
lt. See Anthophyllite.
leiglanz. See Galenite
s. See Fluorite.
t. See Calcite.
e. See Mesolite.
he. See Mesolite.
TE. *Meillet.* $Fe'''_6S_8O_{24}+$

APATITE, *Karst.* $Ca_5(PO_4)_3F$ or $Ca_5(PO_4)_3Cl$. Hexagonal. Amethiste basaltine, *Sage*; aquamarin, *Brunnich*; asparagolithe, *Abild.*; asparagus stone; augustit, *Tromms.*; celadine-green, *Brunnich*; chaux phosphatée, *Vauq.*; — — vert; — — quartzifère, *H.*; chrysolite ordinaire *de Lisle*; francolite, *Brooke*; kietvogit; lasur apatite; lazur apatit, *Nord.*; lime phosphate; moroxit, *Abild.*; phosphate calcaire, *Bronst.*; — de chaux graphiteux; — of lime; phosphorsaurer kalk, *Klapr.*; pierre d'asperge, *Broch.*; — de marmarosch, *Klaproth*; — phosphorique, *Darila*; polysphærite, *Breit.*; sachsischer beryll, *Tromms.*; spargelgrüne steinkrystalle aus Spanien nähern apatit, *Wern.*; spargelstein, *Wern.*
CHLOR-APATITE.
CUPROAPATITE, *Adam.*
FLUOR-APATITE: Rhomboidal fluor haloid.
PHOSPHATIC NODULES: Coprolithes; coprolites.
PHOSPHORITE, *Kirw.*: Eupyrchroite, *Emm.*
PSEUDO-APATITE, *Breit.*: Chaux phosphatée terreuse.
Apatoid. Shep. Meteoric.
Aphanèse. See Clinoclasite.
Aphanesite. See Clinoclasite.
Aphanites. See Serpentine.
Aphanyte. See Amphibole.
Aphérèse, See Libethenite.
Aphrite. See Calcite.
Aphrit, edler, *Hausmann.* See Tourmaline.
Aphrizite. See Tourmaline.
APHRODITE. *Berlin.* $4MgSiO_3+3H_2O$. Hampshirite, *Herm.*
Aphroselenon. See Gypsum.
Aphrosiderite. $Fe''_3Al_2Si_2O_{10}+2H_2O$. Hexagonal.
Aphrysite. See Tourmaline.
Aphryzite. See Tourmaline.
Aphtalose. See Aphthitalite.
Aphthalose. See Aphthitalite.
APHTHITALITE, *Shep.* K_2SO_4. Orthorhombic. Aphtalose, *Beud.*; aphthalose, *Beud.*; aphtitalite; arcanite, *aid.*; arcanum duplicatum, *Alchem.*; glaserite, *Hausm.*; kalisulphat, *Germ.*;

APHTHITALITE—Continued.
potash sulphate; potasse sulfatée, *Fr.*; sal polychrestum Glaseri; schwefelsaures kali; sel de Duobus; sel polychreste de Glaser; sulphate of potash, *Phillips*; tartre vitriolé; Vesuvian salt, *Smithson.*

Aphthonite. Near Tetrahedrite. Aftonite *Svanberg*; aphtonite.

Aphtitalite. See Aphthitalite.

Aphtonite. See Aphthonite.

APJOHNITE, *Glock.* $MnAl_2S_4O_{12}+24H_2O$. Manganalaun; manganese alum, *Apjohn.*

Aplome. See Garnet.

APOPHYLLITE, *H.* $4(H_2CaSi_2O_6+H_2O)+KF$. Tetragonal. Axotomous kouphone-spar, *Mohs*; fischaugenstein, *Wern.*; fish-eye stone; ichthyophthalme, *d'Andrada*; ichthyophthalmite, *d'Andrada*; oculus piscis; pyramidal zeolite; zeolite pyramidal; zeolithe d'Hellesta; zeolithis Suecicis; zeolithus lamellaris major, *Müller*; zeolith von Hellesta, *Rinman.*

ALBIN, *Wern.*

LEUCOCYCLITE, *Herschell.*

MESOTYPE ÉPOINTÉE, *H.*

OXHAVERITE, *Brewster.*

TESSELITE, *Brewster.*

XYLOCHLORE, *Walt.*

Apotome. See Celestite.

Aprizite. See Tourmaline.

Apyrite. See Tourmaline.

Apyroti. See Corundum.

Aquacreptite, Shep. Near Hydrophite.

Aquamarin achter. See Topaz.

Aquamarine. See Apatite and Beryl.

Aquamarine topaz. See Topaz.

Aræoxene. See Dechenite.

Aragonischer apatit. See Aragonite.

Aragonischer kalkspath. See Aragonite.

ARAGONITE, *Haüy.* $CaCO_3$. Orthorhombic. Alm; aragonspath; aragonischer apatit; — kalkspath, *Wern.*; arragon, *Wern.*; arragone, *James.*; arragonite; arragonspar, *Kirw.*; carbonate de chaux prismatique; — of lime, *Phill.*; chaux carbonatée dure; chimborazite, *Clarke*; coconucite; erbenstein pt.; excentrischer kalkstein, *Karst.*; faserkalk pt.; iglit, *Esmarck*; igloit; lime carbonate; mosenite; nadelstein, *Lem* needle spar; oserskit, *Breit.*; p matic lime haloid, *Mohs*; satin s fibrous; shallenkalk pt.; spath caire crist. en prismes hexagones les deux bouts sont striés du cen la circonférence, *H.*; — — dont deux bouts sont lissés, *Darila.*

FLOS FERRI: Aragonitsinter; chaux bonatée coralloides; coralloidal gonite; eisenblüthe, *Wern.*; mas reus ramulosus; sprudelstein; sta tites flos ferri, *Linn.*; stalagmites ralloides, *Wall.*

MOSSOTTITE, *Luca.*

Aragonitsinter. See Aragonite.

Aragonspath. See Aragonite.

Aragotite. Durand. Near Idrialite.

Arcanite. See Aphthitalite.

Arcanum duplicatum. See Aphth lite.

Arctizite. See Wernerite.

Arctolite. $H_2R_3Al_3Si_3O_{14}$.

Ardennite, Lasaulx. SiO_2, Al_2O_3, MnO O_5, As_2O_5, H_2O. Near Ilvaite. Or rhombic. Dewalquite; mangan then.

Arendalite. See Epidote.

Arequipite. SiO_2, Sb, Pb.

Arfwedsonite. See Arfvedsonite.

ARFVEDSONITE, *Brooke.* $[R'_3F'$ Si_3O_9. Monoclinic (?). Arfwed ite; peritomous augite spar, M soda-hornblende.

Argent. See Silver.

Argent amalgame. See Amalgam.

Argent antimonial. See Dyscrasite

Argent antimonial ferro-arsenifère. Dyscrasite.

Argent antimonié sulfuré. See Pyr rite.

Argent antimonié sulfuré noir. Stephanite.

Argent arsenical. See Dyscrasite.

Argent arsenio-sulfuré. See Prou

Argent bismuthifère. See Schi chite.

Argent bismuthique. See Chilenit Schapbachite.

Argent bromuré. See Bromyrite.

Argent carbonaté. See Selbite.

Argent chloro-bromuré. See Embol

Argent chloruré. See Cera

corné. See Cerargyrite.
epis. *Hauy.* See ?
et cuivre sulfuré. See Strom-
ite.
fragile. See Stephanite.
gris. See Tetrahedrite.
gris antimonial. See Freiesleb-

ioduré. See Iodyrite.
molybdique. See Wehrlite.
muriaté. See Cerargyrite.
natif. See Silver.
noir. See Stephanite.
rouge. See Proustite, Pyrargy-

rouge antimonial. See Pyra-
ite.
rouge antimonié. See Pyrargy-

rouge arsenical. See Proustite.
rouge arsenié. See Proustite.
séléniuré. See Naumannite.
sulfuré. See Argentite.
sulfuré aigre. See Stephanite.
sulfuré antimonifère et cupri-
. See Freieslebenite.
sulfuré ferrifère. See Stern-
ite.
sulfuré flexible. See Sternberg-

sulfuré fragil. See Stephanite.
sulfuré plumbifère. See Freies-
nite.
telluré. See Hessite.
vitreux. See Argentite.
vitreux aigre. See Stephanite.
l mercury. See Amalgam.
ferous antimony ore. See Stib-

ferous copper glance. See
meyerite.
ferous galena. See Galenite.
ferous gold. See Gold.
ferous seleniet of copper. See
irite.
ferous sulphuret of copper.
Stromeyerite.
ferous pyrite. See Pyrite.
ne. See Calcite.
ne, *Kirwan.* See Shale.

ARGENTITE, *Haid.* Ag_2S. Isometric. ut sulfuré, *Fr.*; argentum rude bei coloris et galenæ simile, cul- findiitur, dentibus compressum dilatatur, *Agric.*; argentum sulphure mineralisatum, *Wall.*; argent vitreux; argyrit, *Glock.*; argyrose, *Beud.*; black sulphide of silver; deleminozite; glanzerz; glaserz; hexahedral silver glance, *Mohs*; minera argenti vitrea; negrillo (?); schwefelsilber; silberglanz; silberglas; silfverglas; silver glance; silver sulphuret; sulphurated silver ore; sulphuret of silver, *Phillips*; vitreous silver, *Phillips*; weichgewachs, *Germ.*

SILVER BLACK, *James.*: Silbermulm; silberschwärze, *Estner*; silver mulm; sooty silver ore, *Kirwan.*

Argento acido salis mineralisatum. See Cerargyrite.

Argentobismutite. Ag,Bi,S.

Argentopyrite. Pseud. of mixture after Pyrrhotite; argyropyrite; silberkies, *von Walters.*

Argentum arsenico, pauco sulphure, et ferro mineralisatum. See Pyrargyrite.

Argentum arsenico cupro et ferro mineralisatum. See Tetrahedrite.

Argentum cinereum crystallis pyramidatis trigonis. See Tetrahedrite.

Argentum cornu pellucido simile. See Cerargyrite.

Argentum cupro et antimonio sulph. mineralisitum. See Tetrahedrite.

Argentum mineralisatum nigrum fragile. See Stephanite.

Argentum nativum antimonio adunatum. See Dyscrasite.

Argentum rubri coloris. See Pyrargyrite.

Argentum rude album pt. See Tetrahedrite.

Argentum rude jecoris colore, lucem corneam habens. See Cerargyrite.

Argentum rude nigrum. See Stephanite.

Argentum rude rubrum. See Pyrargyrite.

Argentum rude translucidum carbunculis simile. See Proustite.

Argentum sulphure et arsenico mineralisatum. See Cerargyrite.

Argentum vivum. See Mercury.

Argile endurcié. See Clay.

Argile feuilletée. See Clay.

Argile glaise. See Clay.

Argile légère. See Sepiolite.
Argile lithomarge. See Halloysite, Kaolinite, Pinite.
Argile martiale rouge. See Hematite.
Argile natif. See Aluminite.
Argile ochreuse graphique. See Hematite.
Argile ochreuse jaune. See Limonite.
Argile schisteuse novaculaire. See Clay.
Argile smectique. See Kaolinite and Smectite.
Argiles à polir. See Opal, Tripoli.
Argiles à porcelaine. See Kaolinite.
Argiles à potier. See Clay.
Argiles calcaires marines. See Calcite.
Argiles chimiques. See Kaolinite and Smectite.
Argiles ferrugineuses. See Halloysite Limonite.
Argiles figulines.
Argiles hydrates. See Kaolinite and Smectite.
Argiles ocreuses. See Halloysite and Limonite.
Argiles plastique. See Sinopite.
Argillaceous hematite. See Hematite.
Argillaceous ironstone. See Siderite.
Argillaceous lenzinite. See Halloysite.
Argillaceous slate. See Shale.
Argillite. See Shale.
Argillomurite. See Sepiolite.
Argilolite. See Clay.
Argillyte. See Orthoclase.
Argyrit. See Argentite.
Argyrithrose. See Pyrargyrite.
Argyroceratite. See Cerargyrite.
ARGYRODITE. *Weis.* The *Germanium* bearing sulphide of silver.
Argyropyrite. See Argentopyrite.
Argyrose. See Argentite.
Argyrythrose. See Pyrargyrite.
Aricite. See Gismondite.
Arite, Berth. Ni,As,Sb. Aarite; antimonarsennickel, *Petersen.*
Arkansite. See Brookite.
Arksudite. See Arksutite.
ARKSUTITE. $2(CaNa_2)F_2+Al_2F_6$. Arksudite, *Hagem.*
Arktizite. See Ersbyite.
Armenian stone. See Lapis lazuli.
Armenian whetstone. See Corundum.
ARMINITE. $Cu_5S_2O_{11}+6H_2O$.
Arpidélite. See Titanite.
ARQUERITE. $Ag_{13}Hg$. Isometric. Mercure argentifère.
Arragon. See Aragonite.
Arragone. See Aragonite.
Arragonite. See Aragonite.
Arragon spar. See Aragonite.
Arrhenicum. See Orpiment.
Arrhenite. See Fergusonite.
Arsen. See Arsenic.
Arsenantimonfahlerz. See Tetrahedrite.
Arsenargentite. Ag_3As. Orthorhombic.
Arsenblende, gelb. See Orpiment.
Arsenblende, roth. See Realgar.
Arseneisen. See Leucopyrite, Löllingite.
Arseneisensinter. See Pitticite.
Arsenfahlerz. See Tennantite.
Arsenglanz. See Arsenic.
Arsenkies. See Arsenopyrite.
Arsenkies axotomer. See Löllingite.
Arsenkupfer. See Domeykite.
Arsenmangan. See Kaneite.
Arsennickel. See Niccolite.
Arsensilber. See Dyscrasite.
Arsensilberblende. See Proustite.
Arsensinter. See Scorodite.
Arsenuran. See Uraninite.
Arsenate of lime. See Pharmacolite.
Arsenate of lead. See Mimetite.
Arsenate of nickel. See Xanthiosite.
Arsenate of zinc. See Köttigite.
Arsensaures blei. See Mimetite.
Arseniate de chaux. See Pharmacolite.
Arseniate de plomb filamenteux. See Mimetite.
Arseniate of cobalt. See Erythrite.
Arseniate of copper. See Scorodite.
Arseniate of copper martail. See Scorodite.
Arseniate of copper, oblique prismatic. See Clinoclasite.
Arseniate of copper, octahedral. See Liroconite.
Arseniate of copper, prismatic. See Olivenite.
Arseniate of copper, rhomboidal. See Chalcophyllite.
Arseniate of iron. See Pharmacosiderite.
Arseniate of lead. See Mimetite.
Arseniate of lime. See Pharmacolite.
Arseniate of nickel. See Annabergite.

ARSENIC. As. Hexagonal. Arsen, *Naumann*; arsenic natif, *Fr.*; arsenolamprit; fliegenstein; gediegen arsenik, hypotyphite; *Germ.*; native arsenic; rhombohedral arsenic, *Mohs*; scherbenkobalt.

ANTIMONIAL ARSENIC.

ARSENICAL BISMUTH, *Wern.*: Arsen glanz; arsenik glanz; arsenik wismuth, *Wern.*; bismuth arsenical; wismutischer arsen-glanz, *Breit.*

Arsenic, antimonial. See Allemontite.
Arsenic acid. See Arsenolite.
Arsenic blanc. See Arsenolite.
Arsenic bloom. See Arsenolite.
Arsenic cubicum. See Arsenolite.
Arsenic hydride. See (?)
Arsenic jaune. See Orpiment.
Arsenic natif. See Arsenic.
Arsenic oxidé. See Arsenolite.
Arsenic oxyde. See Arsenolite.
Arsenic pyrites. See Arsenopyrite.
Arsenic rouge. See Realgar.
Arsenic sulfuré. See Orpiment and Realgar.
Arsenic sulfuré jaune. See Orpiment.
Arsenic sulfuré rouge. See Realgar.
Arsenic sulphid. See Orpiment, Realgar.
Arsenic, white. See Arsenolite.
Arsenical cobalt. Einfach-arsenik cobalt, *Kenng.*
Arsenical antimonical silver. See Dyscrasite.
Arsenical antimony. See Allemontite.
Arsenical bismuth. See Arsenic.
Arsenical copper. See Domeykite.
Arsenical copper pyrites. See Domeykite.
Arsenical iron. See Arsenopyrite.
Arsenical manganese. See Kaneite.
Arsenical mundic. See Arsenopyrite.
Arsenical nickel. See Niccolite.
Arsenical pyrites. See Leucopyrite and Arsenopyrite.
Arsenical pyrites axotomous. See Leucopyrite.
Arsenical pyrites diprismatic. See Leucopyrite.
Arsenical pyrites prismatic. See Leucopyrite.
Arsenical silver. See Dyscrasite.
Arsenical silver blende. See Proustite.
Arsenical silver ore. See Proustite.
Arsenicaliskkies. See Arsenopyrite.
Arsenioite. See Pharmacolite.
Arsenicum calciforme. See Arsenolite.
Arsenicum crystallinum. See Arsenolite.
Arsenicum flavum. See Orpiment.
Arsenicum nativum crystalinum. See Arsenolite.
Arsenicum nativum farinaceum. See Arsenolite.
Arsenicum sandaraca. See Realgar.
Arsenicum sulphure et cupro mineralisatum, æris modo rubente. See Niccolite.
Arsenicum sulphure mixtum. See Realgar.
Arsenicum rubrum. See Realgar.
Arsenide of manganese. See Kaneite.
Arseniet of nickel. See Niccolite.
Arsenigesäure. See Arsenolite.
Arsenikantimon. See Allemontite.
Arsenikantimon bleispath. See Mimetite.
Arsenikantimon blende. See Realgar.
Arsenikantimon blüthe. See Arsenolite, Pharmacolite.
Arsenikantimon eisen. See Leucopyrite and Löllingite.
Arsenikantimon fahlerz. See Tetrahedrite.
Arsenikantimon glanz. See Arsenic.
Arsenikantimon kalk. See Arsenolite.
Arsenikantimon kies. See Arsenopyrite, Leucopyrite, and Löllingite.
Arsenikantimon kobalt. See Smaltite.
Arsenikantimon kobaltkies. See Skutterudite.
Arsenikantimon kupfer. See Domeykite.
Arsenikantimon kupferwismutherz. See Epigenite.
Arsenikantimon mangan. See Kaneite.
Arsenikantimon nickel. See Niccolite, Smaltite.
Arsenikantimon nickelglanz. See Gersdorffite.
Arsenikantimon nickelkies. See Gersdorffite.
Arseniksaures blei. See Mimetite.
Arseniksaures eisen. See Pharmacosiderite.
Arseniksaures eisen in würfeln kryst. See Pharmacosiderite.
Arseniksaures kobalt. See Erythrite.
Arseniksaures kupfererz. See Olivenite.
Arseniksaures nikel. See Annabergite.

Arsenik silber. See Dyscrasite.
Arsenik silberblende. See Proustite.
Arsenik sinter. See Scorodite.
Arsenik spiessglanz. See Allemontite.
Arsenik wismuth. See Arsenic and Eulytite.
Arsenikalfahlerz. See Tennantite.
Arsenikalisches bleyerz. See Mimetite.
Arsenikalisches lichtes rothgültigerz. See Proustite.
Arsenikaliskkies. See Arsenopyrite.
Arsenikalkies. See Leucopyrite and Löllingite.
Arseniksten. See Arsenopyrite.
Arsenillo. See Atacamite.
Arsenio-antimonial ore. See Chanarcillite.
ARSENIOSIDERITE, *Dufren.* $H_2Fe'''_4Ca_2As_2O_{21}$. Isometric. Arsenocrocite, *Glocker*; arsenokrokit.
Arsenischer pyrrotin. See Niccolite.
Arsenite. See Arsenolite.
Arsenite of nickel. See Annabergite.
Arseniure d'antimoine. See Allemontite.
Arseniure de cuivre. See Domeykite.
Arseniuret of manganese. See Kaneite.
Arsenocrocite. See Arseniosiderite.
Arsenolamprit. See Arsenic.
ARSENOLITE, *Dana.* As_2O_3. Isometric. Acide arsenieux, *Fr.*; arsenic acid; arsenic blanc; arsenic blanc natif, *Fr.*; arsenic bloom; arsenic oxide, *H.*; arsenicum calciforme, *Cronst.*; arsenicum cubicum, *Linn.*; arsenicum nativum crystallinum, *Wall.*; arsenicum nativum farinaceum; arsenige säure, *Germ.*; arsenikblüthe, *Karst.*; arsenite; arsenolith; arsenophyllite; arsenous acid; arsenphyllite, *Breit.*; naturlicher arsenikkalk; octahedral arsenic acid, *Mohs*; oxide of arsenic, *Phill.*; oxyd of arsenic; white arsenic, *Hill.*
Arsenolith. See Arsenolite.
Arsenomelan. See Sartorite and Dufrenoysite.
Arsenophyllite. See Arsenolite.
ARSENOPYRITE, *Glock.* $Fe_2S_2As_2$. Orthorhombic. Arsenical iron, *Phill.*; — mundic; — pyrites, *Allan*; arsenic pyrites, *James*; arsenik-kies, *Wern.*; — stein, *Wall.*; arsenikaliskies; arsenkies; dalarnit; fer arsenical, *Fr.*;

ARSENOPYRITE—Continued.
— sulfuré arsenical, *Haüy*; giftkies, *Breit.*; glanzarsenikkies, *Breit.*; kritkies; lapis subrutilus atque ea fere aliter ac argenti spuma splendens et friabilis, *Germ.*; leukhidite; mispickel, *Henck.*; mistpickel, *Agric.*; pyrite blanche; pyrites albus; pyrites candidus; prismatic arsenical pyrites, *Mohs*; prismatischer arsenikkies; ranchgelbkies; thalheimite, *Breit.*; wasserkies pt., *Gesner*; white mundic.
Argentiferous: Fer arsenical argentifère, *H.*; weisserz pt., *Wern.*
Cobaltiferous: Akontit; cobaltic mispickel, *Hayes*; danaite, *Hayes*; eisenkobaltkies; kobaltarsenikkies; strahlkobalt; vermontite, *Breit.*
Nickeliferous: Mispickel nickeliferous.
Arsenosiderite. See Leucopyrite.
Arsenosiderite. See Löllingite.
Arsenotellurite, Hannay. $Te_2As_2S_7$.
Arsenous acid. See Arsenolite.
Arsenphyllite. See Arsenolite.
Arsensaurer kalk. See Pharmacolite.
Arsenstibite, Adam. $Sb_6As_2O_{14}+15H_2O$ or $Sb_5AsO_{10}+15H_2O$.
Asbeferrite. See Amphibole.
Asbest. See Amphibole.
Asbestartiger okenit. See Wollastonite.
Asbeste. See Amphibole.
Asbeste ligniforme. See Xylotile.
Asbestiform calamite. See Amphibole.
Asbestiform tremolite. See Amphibole.
Asbestoïde. See Amphibole.
Asbestos. See Amphibole.
Asbestus. See Amphibole and Pyroxene.
Asbestus, blue. See Crocidolite.
Asbolan. See Wad.
Asbolite. See Wad.
Asche. See Barite and Dolomite.
Aschentrecker. See Tourmaline.
Aschenzieher. See Tourmaline.
Ash drawer. See Tourmaline.
ASMANITE, *Maskelyne.* SiO_2. Orthorhombic.
Asparagolithe. See Apatite.
Asparagus stone. See Apatite.
Aspasiolite. See Fahlunite.
Aspasiolith. See Fahlunite.
Asperolite. See Chrysocolla.
Asphalt. See Asphaltum.
Asphalt glance. See Asphaltum.
Asphalt oil. See Asphaltum.

See Asphaltum.
ousing. Solid ingredient of
f Bechelbronn.
l. See Asphaltum.
glance. See Asphaltum.
UM. Amorphous. *Ἄσφαλ-
ist., Strabo., Diosc.*; asphalt,
asphalte; asphalt glance;
il; asphaltic oil; asphaltum
ergpech; bergpech schlack-
rgtheer, *Haus.*; bitume, *Fr.*;
Pliny; bitumes de Judée;
bitumen, *Phill.*; black min-
n; compact mineral pitch,
erdpech, *Germ.*; gilsonite;
funerum, *Serapion*; jew's
udenpech, *Wiedemann*; ka-
Sodome; Kimmeridge shale;
pitch, *James.*; poix minérale
Brochant; slaggy mineral
meson.
See Titanite.
See Phlogopite.
See Phlogopite.
Kaolinite.
e Corundum.
rock crystal. See Quartz.
sapphire. See Corundum.
e Corundum.
rt. See?
See Pyroxene.
lite. See Astrophyllite.
. See Bloedite.
ite. See Quartz.
Breit. A chloritic mineral.
roxenus. See Biotite.
ppicus. See Biotite.
YLLITE. *Scheer.* (Fe, Mn,
$(AlFe)_4(SiTi)_3O_{15}$. Ortho-
. Asterophyllite.
Lapis lazuli.
TE, *Blumen.* $CuCl_2$, 3 Cu
Orthorhombic. Arsenille,
akamit; botallackite, *Church*;
nivreuse unie à un peu d'acide
que et d'eau, *Roche*; copper
— muriate —; oxychloride;
muriaté, *H.*; green sand of
alochalzit, *Breit.*; hexymuri-
pper, *Thom.*; kupfer hornerz;
ures; — sand; muriate of cop-
ll.; oxychloride of copper;
te, *B.* and *M.*; sable vert cui-
Pérou; salz kupfererz, *Blum*;

ATACAMITE — Continued.
smaragdochalcit, *Hausm.*; smaragdo-
chalzite, *Mohs*; tanah-ampo.
Atakamite. See Atacamite.
Atelestite, Breit. Contains Bi. Monoclinic.
Atelina. See Atelite.
ATELITE. $Cu_3Cl_2(OH)_4+H_2O$. Atelina.
Ateriastit. See Atheriastite.
Atheriastite. Altered wernerite; aetheri-
astite; ateriastit.
Atlaserz. See Malachite.
Atlasite, Breit. A carbonate of copper
containing chlorine.
Atlasspath. See Calcite.
ATOPITE. $(CaFeMgK_2Na_2)_2Sb_2O_8$. Iso-
metric.
Atramenstein. See Copperas group.
Atramentum. See Copperas group.
**Atramentum album durum goslaria-
num.** See Copperas group.
**Atramentum album fossile durum gos-
larianum.** See Goslarite.
Atramentum cœruleum. See Chal-
canthite.
**Atramentum cœruleum cyprium pul-
cherium.** See Copperas group.
Atramentum sutorium. See Copperas
group and Melanterite.
Atramentum sutorium candidum. See
Copperas group.
Atramentum sutorium cœruleum. See
Copperas group.
**Atramentum sutorium, potissimum re-
peritur goselariae, translucidum,
crystalli instar.** See Goslarite.
Atramentum sutorium viride. See
Copperas group and Melanterite.
Atramentum viride. See Melanterite.
Atremenstum sutorium. See Copperas
group.
Atremenstum viride. See Copperas
group.
Attacolite Al_2O_3, P_2O_5, Fe_2O_3, CaO, MnO,
H_2O. Attakolith, *Blomstrand.*
Attakolith. See Attacolite.
Auerbachite, Hermann. Near Zircon.
AUGELITE. $Al_3(PO_4)_2+3H_2O$. Auge-
lith, *Blomstrand.*
Augelith. See Augelite.
Augite. See Amphibole and Pyroxene.
Augit, blättriger. See Amphibole.
Augit, körniger. See Pyroxene.
Augit, muscheliger. See Pyroxene.
Augit, schlackiger. See Tachylyte.

Augit spath. See Pyroxene.
Augustite. See Apatite.
Auhhorn. See Opal.
Auina. See Haüynite.
Auralite. See Fahlunite.
Auralite. See Iolite.
AURICHALCITE, *Bottger.* $H_6(CuZn)_5C_2O_{13}$. Aurichalcum of ancients?, *Sage*; blue calamine; brass ore, *Kirwan*; buratite, *Delesse*; calamine verdâtre; green calamine, *Patrin*; messingbluthe, *Germ.*; mine de laiton, *Patrin*; mine de laiton de Pise; orichalcite, *Glock.*; risseite.
Aurichalcum. See Aurichalcite.
Auriferous amethyst. See Quartz.
Auriferous blende. See Sphalerite.
Auriferous galena. See Galenite.
Auriferous pyrites. See Pyrite.
Auriferous quartz. See Quartz.
Auripigment. See Orpiment.
Auripigmentum. See Orpiment.
Auro poudre. See Gold.
Aurotellurite. See Sylvanite.
Aurum bismaticum. See Sylvanite.
Aurum galena, ferro, et particulis volatilibus mineralisatum. See Nagyagite.
Aurum graphicum. See Sylvanite.
Aurum paradoxum. See Tellurium.
Aurum problematicum. See Tellurium.
Automalite. See Gahnite.
Automolite. See Gahnite.
Automolithe. See Gahnite.
AUTUNITE, *B.* and *M.* $CaU_2P_2O_{12}+10H_2O$. Orthorhombic. Calcareous uran-mica; calcouranit, *Breit.*; chalcolite pt.; chalkolite; chalkolith; kalkuranit; lime uranate; —uranite; micaceous uranitic ore; phosphate of uranium; pyramidal euchlore mica; sel à base de chaux où l'oxide d'urane joue le rôle d'acide, *Berz.*; uranate de chaux: urane micacé; — oxyde; uranglimmer pt.; uranit, *Berz.*; uran-kalk; urammica; uranium phosphate.
Avalite. $SiO_2,Cr_2O_3Al_2O_3$.
Avanturin. See Quartz.
AVASITE. $Fe^{III}_{10}Si_2O_{19}+9H_2O$.
Aventurine. See Albite.
Aventurine feldspar. See Oligoclase and Orthoclase.
Aventurine quartz. See Quartz.
Axestone. See Amphibole and Jadeite.
Axigraphe. See Calcite.
AXINITE. $H(CaFe)_3Al_2B(SiO_4)_4$. Triclinic. Espèce de schorl, *Schreiber*; glasschorl, *Blum.*; glasssteiu; janolite, *la Metherie*; pierre de thum, *Broch.*; prismatic axinite, *Mohs*; schorl transparent lenticulaire; schorl transparent rhomboïdal; schorl violet; thumerstein, *Wern.*; thumerstone, *James.*; thumite; yanolite, *Dela.*; yanolithe.
Axotomes eisenerz. See Menaccanite.
Axotomous antimony-glance. See Jamesonite.
Axotomous arsenic pyrites. See Leucopyrite.
Axotomous arsenical pyrites. See Leucopyrite.
Axotomous iron. See Menaccanite.
Axotomous iron ore. See Menaccanite.
Axotomous kouphone spar. See Apophyllite.
Axotomous lead baryt. See Leadhillite.
Axotomous spar. See Apophyllite.
Axotomous triphane spar. See Prehnite.
AZORITE, *Dana.* $CaCb_2O_6$ (?). Tetragonal. New mineral from the Azores, *Teuch.*; açorite, *Dufr.*; tantalate de chaux.
Azote. See Nitrogen.
Azul. See Lapis lazuli.
Azur de cuivre. See Azurite.
Azure-blue copper ore. See Connellite.
Azure copper ore. See Azurite.
Azure spar or stone. See Azurite and Lazulite.
Azurite. See Lazulite.
AZURITE, *Beud.* $Cu_3C_2O_7+H_2O$. Monoclinic. Azur de cuivre; azure copper ore, *James.*; —spar, *James.*; —stone, *James.*; bergblau; — lasur, *Agric.*: bleu de montagne; blue carbonate of copper; — malachite; — melachite (?); cæruleum; — montanum, *Wall.*; calciform copper ore; carbonate of copper; Chessy copper; chessylite, *B.* and *M.*; copper blue, — carbonate; cuivre azuré; — bleu: — carbonaté bleu, *Haüy*; cuprum lazureum, *Wall.*; koppar-lazur; kupfer lazur, *Wern.*; lapis armenius, *Pliny*: lasur, *Haid.*; lasurite, *Haid*; mineral blue; mountain blue; prismatic azure malacite, *Mohs*; Zincazurite.
Babel quartz. See Quartz.

ITE, *Levy*. $R''_9Fe'''_3Si_{12}O_{36}$.

See Mineral coal.
See Malachite.
See Amphibole
e Amphibole.
See Epidote.
See Allanite.
Pyroxene.
e Columbite.
ee Pyroxene.
Tar-like fluid from Baike-
erit pt.; dickflüssiges harz,

e Baikerinite and Ozocerite.
See Spinel.
See Spinel.
Spinel.
See Magnesite.
ee Celadonite.
Spinel.
ee Spinel.
. See Marcasite.
e Siderite.
See Serpentine.
ddle. Silicate of uncertain
on.
e Fibrolite.
See Quartz.
t. See Quartz.
See Quartz.
See Quartz.
e Chamoisite.
e Chamoisite.
ar. See Naphtha.
llet. An antimony mineral
l with Livingstonite.
rble. See Calcite.
See Anhydrite.
e Calcite.
bicci. Silicate containing
), CO_2 SO_3, etc.
Copper.
bre. See Copper.
aSO_4. Orthorhombic. Ach-
asche; baroselenite, *Kir-*
t, Karst.; baryta sulphate;
H.; barytes; baryterde;
alfatée; barytine, *Beud.*;
Delam.; baroselenite, *Kirw.*;
tone; bologneserspath; bo-
one; bolognian spar; bo-
ksten; calk; cauk; cawk;

BARITE—Continued.
cockscomb barytes; columnar heavy spar, *Jameson*; faserbaryt; granular heavy spar; gypsum irrégulaire; — lamelleuse; — ponderosium, *v. Born*; — spatosum; heavy spar, *Jameson*; kevil, *Derbeyshire*; lamellar heavy spar; lapis bononiensis, *Licetus*; leedsite, *Thomson*; leswersten; lithiosphorus, *Licetus*; lithiospore; lysesten; marmor metallicum, *Cronst.*; prismatic halbaryte, *Mohs*; phosphore de Bologne; pierre de Bologne; radiated barytes; schoarite; schwefelsaures baryte, *Germ.*; schwerspath, *Wern.*; spath pesant, *de Lisle*; — séléniteux, *de Lisle*; spathum ponderosum; spatum tessulare, *Wall.*; — bononiense; stahlbaryt; stangenspath, *Wern.*; strahlbaryt; strangenspath, *Wern.*; sulphate of baryta; — barytes; terra calcareo phlogisto et acido vitrioli mixta, *Cronst.*; terra ponderosa vitriolata, *Bergm.*; tungspat; wolnyn.

ALLOMORPHITE, *Breit.*

CALCAREOBARITE, *Thom.*: Calcareous barytes; calcareo sulphate of baryta; kalk baryt.

CALSTRONBARITE, *Shep.*

CELESTOBARITE: Baryto celestine; — coelestin, *v. Walt.*; sulphate of strontiane; celestite; — sulfate de strontiane.

HEPATITE, *Karst.*: fetid heavy spar; — sulphate of baryta; lapis hepaticus, *Cronst.*; léberstein pt.; petroleo imbuta, *Bergm.*; pierre puante; saulenschwerspath; spath pesant aéré.

BARNHARDTITE, *Genth*. $Cu_4Fe_2S_5$. Massive.

DUCKTOWNITE, *Shep.*

HOMICHLIN, *Breit.*: Homocline.

Barolite. See Witherite.

Baroselenite. See Barite.

BARRANDITE, *v. Zepharovich*. $Fe'''_4Al_3P_7O_{28}+14\,H_2O$. Crystalline.

Barsowite, G. Rose. Feldspar. Near Anorthite.

Bartholomite, Cleve. $Na_4Fe'''_3S_4O_{17}+2\,H_2O$. Crystalline.

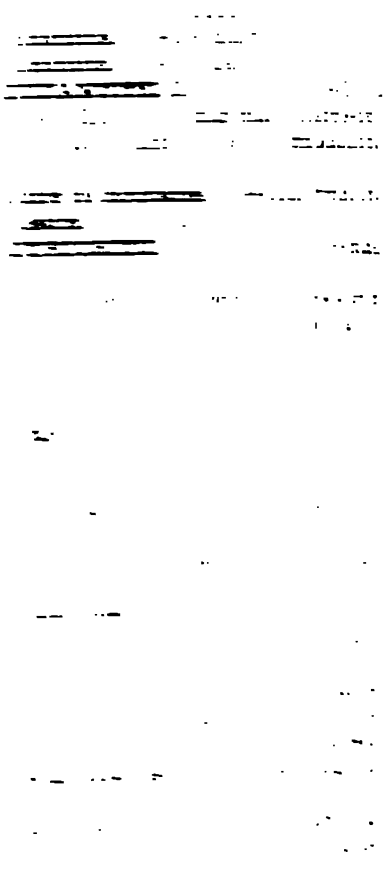
Barylite, Blomstrand. $Ba_4Al_4Si_7O_{24}$. Crystalline.

Bary-strontianite. See Strontianite.

Baryt. See Barite.
Baryta carbonate. See Witherite.
Baryta potash feldspar. See Hyalophane.
Baryta sulphate. See Barite.
Baryta, sulphato-carbonate of. See Witherite.
Baryte carbonatée. See Witherite.
Baryterde. See Barite.
Barytes. See Barite.
Baryte sulfatée. See Barite.
Baryt glimmer. A barium mica from Pfitschthal.
Baryt harmotome. See Harmotome.
Baryt hédyphane, Lindstr. $3[PbBa]As_2O_8+PbCl_2$.
Baryt kreutzstein. See Harmotome.
Baryt plagioklas. See Hyalophane.
Baryt plagioklas. Triclinic hyalophane of Descloizeaux.
Baryt strontianite. See Strontianite.
Baryt uranite. See Uranocircite.
Barytine. See Barite.
Barytite. See Barite.
Barytocalcite. See Bromlite.
BARYTOCALCITE, *Brooke.* $(BaCa)CO_3$. Monoclinic. Hemi prismatic hal-baryte.
Barytocalcite en prisme droit. See Bromlite.
Baryto-celestine. See Barite and Celestite.
Barytocelestite. See Barite and Celestite.
Barytocölestin. See Barite and Celestite.
Baryto-fluor-spar. See Fluorite.
Barytophyllit. See Chloritoid.
Baryto-strontianite. See Strontianite.
Barytosulfate de strontiane. See Barite and Celestite.
Barytosulphate of strontian. See Barite and Celestite.
Baryum uranite. See Uranocircite.
Basalt. See Labradorite.
Basalt jasper. See Quartz.
Basalt jaspis. See Quartz.
Basaltes. See Amphibole and Pyroxene.
Basaltes albus polyedrus granatiformis. See Leucite.
Basaltes crystallisatus. See Staurolite.
Basaltes crystallisatus. See Tourmaline.
Basaltes crystallisatus albus crystallis prismaticis. See Nephelite.
Basaltes spatosus. See Pyroxene.
Basaltes transparent. See Tourmaline.
Basaltic hornblende. See Amphibole.
Basaltine. See Pyroxene.
Basaltische hornblende. See Pyroxene.
Basaltische hornblende. See Amphibole.
Basaltspeckstein. See Neolite.
Basanite. See Quartz.
Basanomelan. See Menaccanite.
Basicerine. See Fluocerine.
Basic flucerien. See Fluocerite.
Basic flucerine. See Fluocerine.
Basic sulphate of uranium. See Voglianite.
Basik flussspatssyradt cerium. See Fluocerine.
Basisches fluocerium. See Fluocerine.
Basisches schwefelsaures eisen oxyd. See Copiapite.
Basisches schwefelsaures uranoxyd. See Zippeite.
Basisk fluorcerium. See Bastnäsite.
Baster taufstein. See Staurolite.
Bastite. See Pyroxene.
Bastite. See Enstatite.
Bastite, Haid. Near Serpentine. Orthorhombic. Diallage pt., *H.*; — chatoyante; metalloidal diallage pt.; schiller spar; — spath, *Heyer*; — stein, *Wern.*; — stone; talkart, r. *Trebra*; talkartigerdiallage, *Hausmann.* PHAESTINE: Phästin, *Breit.*
Bastkohle. See Mineral coal.
BASTNÄSITE, *Huot.* $[(Ce,La,Di)F]CO_3$. Orthorhombic. Basisktluorcerium, *Hisinger*; hamartite, *A. E. Nordenskiöld.*
Bastnoesite. See Fluocerine.
Bastonite. See Lepidomelane.
BATHVILLITE, *Williams.* $C_{40}H_{62}O_9$. Amorphous.
Batrachite. See Monticellite.
Battle quartz. See Quartz.
Baudisserite. See Magnesite.
Baulite. See Orthoclase.
Baume de momie. See Pittolium group.
Bauxite. See Beauxite.
Bavalite. See Chamoisite.
BAYLDONITE, *Church.* $(PbCu)_4As_2O_9+H_2O$. Amorphous.
Bean ore. See Limonite.
Beaumontite. See Ch
Beaumontite. See[1]

TE, *Dufr.* $(Al_2Fe_2)O_3+2H_2O$.
hous. Alumine hydratée de
, *Berth.*; aluminum ore; baux-
rille; wocheinite, *Flechner*.
. See Zircon.
ITE, *Dana.* $CaB_4O_7+4H_2O$.
hous. Hayesine?, *Bechi*; hy-
borate of lime; lime borate.
ade. See Uraninite.
See Quartz.
ITE. $Pb_6Bi_2S_9$. Isometric.
See Quartz.
ones. See Siderite.
See Anorthite.
See Amphibole
h. See Calcite.
. See Calcite.
l ore. See Stannite
See Aikinite.
See Trichite.
härites. See Crystallites.
E. C_6H_6. Mineral oil.
NITE, *Breit.* $Fe'''_6(PO_4)_4(OH)_3$
O. Monoclinic. Eleonorite.
, *Johnston.* $C_{40}H_{62}O_8$.
kite. See Amphibole.
See Azurite and Lazulite.
r. See Halotrichite.
tal. See Quartz.
See Limonite.
See Limonite.
. See Malachite.
See Amphibole.
See Xylotile.
. See Amphibole.
. See Xylotile.
al. See Quartz.
. See Azurite.
. See Serpentine.
. See Opal.
. See Calcite.
h. See Calcite.
See Naphtha.
. See Asphaltum and Wal-
te.
See Halite.
. See Halloysite.
. See Montmorillonite.
r. See Asphaltum.
r. See Pittoleum group.
r flussiges. See Naphtha.
ober. See Mercury.
ober. See Cinnabar.
lerz. See Jamesonite.
See Natrolite.

Beril. See Beryl.
Beril feuilleté. See Cyanite.
Beril, noble. See Beryl.
Berill. See Beryl.
Berillus. See Beryl.
BERLINITE, *Blomstrand.* $2Al_2P_2O_8+H_2O$. Amorphous.
Berlinerblau. See Lazulite.
Bernardinite, Stillman. Not a fossil resin.
Bernerde. See Retinellite.
Bernonite, Adam. $Al_2CaO_4+6H_2O$.
Bernstein. See Succinite.
Berthierine. See Chamoisite.
BERTHIERITE, *Haid.* $FeSb_2S_4$. Crystalline. Antimonical sulphide of iron; haidingerite, *Berth.*; iron antimonical sulfuré.
BERTRANDITE. $2Be_2SiO_4+H_2O$. Orthorhombic.
BERYL. $Be_3Al_2(SiO_3)_6$. Hexagonal. *βηρυλλος, Gr.*; beryll; berillus; beril noble; beryll; bloagrön topas, *Cronst.* Brazilian tourmaline; chrysolite du Brésil, *de Lisle*; gemma pelucidissima; precious beryll; rosterite; schmaragd, *Wern.*; smaragd; smaragdus; silicate of alumina and GLUCINA, *Vauq.*; — — — with lime, *Achard.*
AEROÏDES, *Plin.*
AMETHISTE BASALTINE, *Sage.*
AQUA MARINE; aigue marine, — — de Sibérie.
CHRYSOBERYLLUS, *Plin.*
CHRYSOPRASIUS; chrysoprase; chrysolithus; Davidsonite, *Thom.*
EMERALD; *Σμαραγδος* pt., *Theoph.*; emerald, precious; émeraude; — du Pérou; — verte; rhombohedral emerald; smeraldo.
GOSHENITE, *Shep.*
HYACINTHOZONTES, *Plin.*
Beryll. See Beryl.
Beryllus. See Chrysolite.
Berzelianite. See Beryl.
BERZELIANITE, *Dana.* Cu_2Se. Dendritic. Berzeline, *Beud*; copper seleniuret; cuivre sélénié, *Fr.*; selencuprite; selenid of copper; séléniure de cuivre, *Berzelius*; seleniuret of copper, *Phillips*; seleniuret of lead and copper, *Phillips*; selenkupfer, *Berg.*
BERZELIITE, *Kuhn.* $(CaMgMn)_{10}As_6O_{25}$. Crystalline. Berzelit, *Haid.*; chaux arseniatée anhydre, *Dufr.*;



astrites trappi
iron mica; chrom
chrom glimmer; el
Igelst.; euchl
Keung.; gli
haughtonite;
hydrobiotite; ma
Haan: magnesi
Lepidomelane. *Breit.*
Phlogopite. Rhombenglimme
Talcomicane. talc mica,
Breit.; sideroph
Jahn. triaxial mi
Haüy. Bipl
arfvedsonite.

Phosphate of ammonia.

Struvite.

Phosphate marine (al
Found.
Hemimorphite.
Staurotide.
Silicate de chaux. W
Silicate de manganese.
Rhodonite.

Silicate de manganese et
une variété.

BISMITE, *Dana.* Bismite, *Macgregor*; Bismuth ocher; *Jameson*; Bismuth ocher; b
ite, *Haüy*; Bismuth ocher; bismuth; oxide of bi
ous bismuth; oxide of bi
ous bismuth; oxide of bi

carbonate. See Bismutite.
cobalt. See Smaltite.
cobalt erz. See Chelentite.
cupreous. See Emplectite, chenite, and Aikinite.
ferruginous arsenide of.
glance. See Bismuthinite.
gold. See Gold.
hypochlorite. See Hypochlo-
nickel. See Grünauite.
ocre. See Bismite.
ochre. See Bismite.
oxidé. See Bismite.
oxyd. See Bismite.
oxydé. See Bismite.
sélénié tellurifère. See Bis-
silicate. See Eulytite.
silver. See Chilenite and pbachite.
sulfo plumbo-cuprifère. See ite.
sulfuré. See Bismuthinite.
sulfuré cuprifère. See Em-ite.
sulfuré cuprifère. See Wit-nite.
sulfuré plombo-argentifère. Schapbachite.
sulfuré plombo-cuprifère. Aikinite.
sulphuret. See Bismuthinite.
, telluric. See Tetradymite and ite.
telluré. See Tetradymite and ite.
tellurifère. See Tetradymite Joséite.
ine. See Bismuthinite.

THINITE, *Dana.* Bi_2S_3. Ortho-hic. Bismuth glance; bismuth-*Beud.*; bismutholamprite, *Glock.*; uth sulfuré, *Fr.*; bismuth sul-et; galena de bismuth; pris-c bismuth glance; sulphurated uth; sulphuret of bismuth; tel-ismuthglanz; visimutum sul-re mineralisatum, *Cronst.*; wis-glanz; wismuthglanz, *Germ.*
ite. See Bismutite.
lisches silber. See Schapbach-

olamprite. See Bismuthinite.
trites. See Tetradymite.

Bismutite, Lindaker.

BISMUTITE, *Breit.* $2\,Bi_2C_2O_{15}+9\,H_2O$. Pseudomorphous. Bismuthite; carbonate of bismuth; kohlensaures wismuthoxyd; wismuthspath, *Germ.*

Bismutoferrite. See Hypochlorite.

BISMUTOSPHÆRITE. Bi_2CO_5.

Bissolithe. See Amphibole.

Bisulfuré de cuivre. See Chalcocite.

Bisulfuré de manganèse. See Hauerite.

Bisulphuret of copper. See Covellite.

Bisulphuret of iron. See Pyrite.

Bitelluret of lead. See Nagyagite.

Bitelluret of silver. See Hessite.

Bitterkalk. See Dolomite.

Bittersalz. See Epsomite.

Bittersalzerde. See Dolomite.

Bitter spar. See Dolomite.

Bitterspath. See Dolomite.

Bitterstein. See Zoisite.

Bitume élastique. See Elaterite.

Bitume glutineux. See Pittolium.

Bitume liquide. See Naphtha.

Bitume liquide blanchâtre. See Naphtha.

Bitume liquide brun. See Naphtha.

Bitume liquide noirâtre. See Naphtha.

Bitume visqueux. See Pittolium.

Bitumen. See Asphaltum.

Bitumen elastic. See Elaterite.

Bitumen from Bovey. See Retinellite.

Bitumen liquidum candidum. See Naphtha.

Bitumes. See Elaterite, Naphtha, and Asphaltum.

Bitumes de Judée. See Asphaltum.

Bituminit. See Mineral coal.

Bituminous cinnabar. See Cinnabar.

Bituminous coal. See Mineral coal.

Bituminous copper coal. See Mineral coal.

Bituminous limestone. See Calcite.

Bituminous wood. See Mineral coal.

Bituminoses holz. See Mineral coal.

Bjelkite. See Cosalite.

Black arsenic. Arsenic oxide?.

Black-band. See Siderite.

Black and brown delvauxene. See Dufrenite.

Blackbrush. See Limonite.

Black chalk. See Clay.

Black cobalt. See Wad.

Black cobalt ochre. See Wad.

Black copper. See Melaconite.

Black garnet. See Garnet.

Bleibismuth.
Bleibluthe.
Bleicarbonat.
Bleichromat.
Bleierde.
Bleierde, zerreiblicher.
Bleierz, blau.
Bleierz, braun.
Bleierz, gelbes.
Bleierz, grün.
Bleierz, roth.
Bleierz, schwarz.
Bleierz, weiss.
Bleifahlerz. See
Bleigelb. See
Bleiglanz. See
Bleiglas. See
Bleiglätte. See
Bleigummi. See
Bleihornerz. See
Bleihydroaluminat. See
mite.
Bleikerat. See
Bleikupferarsenia
Bleilasur. See
Bleimolybdat. See
Bleiniere. See
Bleinierite. See

Bleiweiss. See Cerussite.
Bleiwismuth glanz. See Galenobismutite.
Blende. See Sphalerite.
Blende charbonneuse. See Mineral coal.
Bleu de cuivre. See Chrysocolla.
Bleu de montagne. See Azurite.
Bleu de montagne. See Chrysocolla.
Bleu de prusse natif. See Vivianite.
Bleu du roi. See Corundum.
Bleu martial cristallisé. See Vivianite.
Bleyertz. See Graphite.
Bleyertz. See Molybdenite.
Blind coal. See Mineral coal.
Blistered copper ore. See Chalcopyrite.
Bloagrön topaz. See Beryl.
Bloa jarnjord. See Vivianite.
Blodsten. See Limonite and Hematite.
BLÖDITE, *John.* Na_2SO_4. $MgSO_4+4$ H_2O. Crystalline. Astrakanit, *Rose.*
Bloodstone. See Quartz.
Bloodstone. See Hematite.
Blue asbestus. See Crocidolite.
Blue calamine. See Aurichalcite.
Blue carbonate of copper. See Azurite.
Blue copper. See Covellite.
Blue feldspar. See Lazulite.
Blue iron. See Vivianite.
Blue iron earth. See Vivianite.
Blue ironstone. See Crocidolite.
Blue john. See Fluorite.
Blue lead. See Galenite.
Blue malachite. See Azurite.
Blue sapphire. See Corundum.
Blue spar. See Lazulite.
Bluestone. See Chalcanthite.
Bluestone. A sulphide of Zn, Pb, Cu, etc.
Blue talc. See Penninite.
Blue talc of Taberg. See Penninite and Ripidolite.
Blue vitriol. See Chalcanthite.
Blue zeolite. See Laps Lazuli.
Blumenbachite. See Alabandite.
Blumite. See Megabasite.
Blutstein. See Hematite.
Blutstein schuppiger. See Hematite.
Blyglanz. See Galenite.
Blyochra. See Cerussite.
Blyspat. See Cerussite.
Blyspath. See Cerussite.
BOBIERRITE, *Dana.* $Mg_3P_2O_8$. Monoclinic. Phosphate de magnésie tribasique et hydraté, *Bobierre.*
Bodenite, Breit. Near Allanite. Silicate of aluminium, iron, cerium, and yttrium.
Börnstein. See Succinite.
Bog butter. See Butyrellite.
Bog-iron ore. See Limonite and Limnite.
Bog manganese. See Wad.
Bog ore. See Limonite and Limnite.
Bog ore. See Xanthosiderite.
Boghead cannel coal. See Torbanite.
Boghead mineral. See Torbanite.
Boghead kohle. See Mineral coal and Torbanite.
Bohemian bean ore. See Limonite.
Bohemian diamond. See Quartz.
Bohemian garnet. See Garnet.
Bohemian topaz. See Quartz.
Bohmischer granat. See Garnet.
Bohnerz. See Limonite.
Boilstein. See Jadeite.
Bois bitumineux. See Mineral coal.
Bois de montagne. See Xylotile.
Bois pétrifié. See Opal.
Bol d'Arménie. See Sinopite.
Bol de Sinopis. See Sinopite.
Bole. See Halloysite.
Bole of Sinope. See Sinopite.
Bole of Stolpen. See Montmorillonite.
Boleretine. A resin.
Bolides. See Meteorites.
Bolivian. See Bolivianite.
Bolivianite. Ag, Sb, S. Orthorhombic. Bolivian, *Breit.*
Bolivite, Domeyko. Bi_2O_3 with Bi_2S_3.
Bologna stone. See Barite.
Bolognesерspath. See Barite.
Bolognese stone. See Barite.
Bolognian spar. See Barite.
Bolopherit. See Pyroxene.
Bolovérite. See Anthophyllite.
Boltonite. See Forsterite.
Bolus. See Sinopite.
Bolus particulis squamosis. See Amphibole.
BOMBICCITE, *Bechi, d'Achiardi.* C_7 $H_{13}O$. Triclinic.
Bombit. Silicate of iron and alumina from Bombay.
Bone phosphate. See Osteolite.
Bone turquois. See Odontolite.
Bononiensisksten. See Barite.
Bonsdorffite. See Fahlunite.
Bonsdorfite. See Fahlunite.
Boracic acid. See Sassolite.
BORACITE. $Mg_7Cl_2B_{16}O_{30}$. Isometric. Borate of magnesia, *Phillips*; borazit, *Wern.*; kubische quarzkrystalle,

BORACITE—Continued.
Lasius; Lüneburger sedativspath, *Westrumb.*; magnésie boratée, *Fr.*; massive boracite of Stassfurt, *Rose*; parasit, *Volger*; stassfurthite, *Rose*; stasfurtit, *Rose*; stassfurtit; tetrahedral boracite, *Mohs*; würfelstein.

Borate de fer. See Lagonite.

Borate of lime. See Ulexite and Datolite.

Borate of magnesia. See Boracite.

Borate of soda. See Borax.

BORAX, *Wall.* $Na_2B_4O_7+10H_2O$. Monocliuic. Borate of soda, *Phillips*; boraxsaures natron, *Germ.*; borass, *Agric.*; borax salt, *Agric.*; chrysocolla (ex nitro confecta), *Agric.*; pounxa; prismatic borax salt, *Mohs*; soude boratée, *Fr.*; swaga; tincal; tinkal, *India*; tincalconite; zula.

Borax basaltes. See Tourmaline.

Borax electricus. See Tourmaline.

Borax salt. See Borax.

Boraxsäure. See Sassolite.

Boraxsaures natron. See Borax.

Borazit. See Boracite.

Bordite. See Okenite.

Bordosite, Bertrand. AgCl.HgCl.

Bore. See Sassolite.

Borech. See Trona.

Boric acid. See Sassolite.

BORICKITE, *Dana.* $(Fe_2Ca_3)_5P_4O_{25}+15H_2O$. Massive. Delvauxene, r. *Hauer.*

Bornine. See Josëite.

Bornine. See Tetradymite.

Bornite. See Tetradymite.

BORNITE, *Haid.* Cu_3FeS_3. Isometric. Brun kopparmalm, *Wall.*; buntkupfererz, *Wern.*; buntkupferkies; chalcomiclite, *Blom.*; cobre abigarrado, *Domeyko*; cobre panaceo, *Domeyko*; copper sulphuret; cuivre panaché; cuivre pyriteux hépatique, *H.*; cuivre sulfuré violet, *De Born*; cuivre vitreux violet; cuprum sulfure et ferro mineralisatum, *Wall.*; erubescite, *Dana*; horse-flesh ore, *Cornish miners*; iridescent copper pyrites; koppar-lazur, *Cronst.*; kupferkies pt., *Werner*; kupferlazul, *Henckel*; lefver slag, *Wall.*; liver-colored copper ore; mine de cuivre panaché ou violet; *Brochant*; minera cupri hepatica; minera cupri lazurea, *Cronst.*; octahedral copper pyrites, *Mohs*; phillipsite, *Beud.*; poikilit, *Breith.*; poikilopyrites, *Glock.*; purple copper ore, *Kirw.*; pyrites erubescent, *Dana*; variegated copper ore, *Jameson*; variegated pyrites; pyritous copper, variegated

Borocalcite. See Ulexite.

Boromagnesite. See Szaibelyite.

Boronatrocalcit. See Ulexite.

Borosilicate of lime. See Datolite.

Borsäure. See Sassolite.

Borsaurer kalk. See Ulexite.

Borsaures natron. See Borax.

BOSJEMANITE, *Dana.* $(MnMg)Al_2(SO_4)_4+22H_2O$. Monoclinic. Keramohalite, *Schweizer*; manganese alum pt.; mangano-magnesian alum.

Botallackite. See Atacamite.

Botriolit. See Datolite.

Botryite. See Botryogen.

BOTRYOGEN, *Haid.* $Fe_2S_4O_{24}+36H_2O$. Monoclinic. Botryite, *Dana*; botryt, *Glock.*; botyrit; eisenoxyd, schwefelsaures; fer sulfaté; fer sulfaté rouge, *Fr.*; native red iron vitriol; native red iron vitriol of Fahlun, *Haid.*; neoplase pt., *Beud.*; red iron vitriol; rother eisen vitriol, *Berz.*; vitriol rouge.

Botryolite. See Datolite.

Botryolithe. See Datolite.

Botryt. See Botryogen.

Botyrit. See Botryogen.

Bottle stone. See Orthoclase.

Bottle stone of Moravia. See Chrysolite.

BOULANGERITE, *Thaulow.* $Pb_3Sb_2S_6$. Crystalline. Acicular boulangerite antimonbleiblende; antimony and lead sulphuret; embrictite; embrithite, *Brochant*; embrithrite; plomb antimonié sulfuré, *Boulang.*; plumbostib, *Breit.*; schwefelantimonblei, *Germ.*; sulphide of antimony and lead; sulphuret of antimony and lead.

Bourboulite. See Melanterite.

Bournonite. See Fibrolite.

BOURNONITE, *James*
Orthorhombic.
plombo-cu

NITE—Continued.
ance; antimonial lead ore,
n; antimonkupfer-glanz,
axifrangible antimony glance,
n; bleifahlerz; cog-wheel ore;
natic copper glance, *Mohs*;
ione, *Bourn.*; endellionite,
lead antimoniacal sulphuret;
antimony, *P. Rashleigh*; plomb
antimonifère, *H.*; plomb sul-
umbo cuprifère; prismatischer
las-glanz, *Mohs*; prismati-
kupferglanz, *Mohs*; radelerz,
miners; schwarzspiesglanzerz,
schwarzspiesglaserz, *Wern.*;
glanzblei, *Kurst.*; spiessglanz-
, *Hausm.*; triple sulphuret,
s; triple sulphuret of lead, an-
, and copper, *Bournon*; wheel
ölchite, *Haid.*

t-nickelglanz. See Ullmann-

dite, Bechi. $(NH_4Mg)SO_4+H_2O$.
rhombic. Cerbolite.

nstein. See Orthoclase.

al. See Retinellite.

. See Serpentine.

te. See Saponite.

pe manganese. See Braunite.

pous lead baryte. See Phos-
.

pous lime haloid. See Dolo-

pous parachrose baryte. See
te.

pous zinc baryte. See Wille-

schite. See Descloizite.
See Fergusonite.
rbes & Dahl. Near Zircon.
. See Hartite.
See Idrialite.
e. See Seybertite.
lefer. See Shale.
outh Wales. $FeCO_3$(?).
See Aurichalcite.
Kirwan. Mixture of Chalcopyr-
l Sphalerite.
al. See Mineral coal.
Mineral coal.
erz. See Pyromorphite and
linite.
1. See Plattnerite.
monite.

Brauneisenstein. See Limonite.

BRAUNITE, *Haid.* Mn_2O_3. Tetragonal. Brachytype manganese; brachytypous manganese ore, *Haid.*; hartbraunstein, *Hausm.*; heterocline, *Dufrenoy*; heteroklin, *Breit.*; leptonèmatite, *Adam*; manganese oxyd; marceline, *Beud.*; oxide of manganese.

Braunkohle. See Mineral coal.

Braunmänakerz. See Titanite.

Braunsalz. See Tecticite.

Braunspath. See Dolomite and Siderite.

Braunstein. See Hausmannite.

Braunstein blende. See Alabandite.

Braunsteinkalk. See Calcite.

Braunsteinkies. See Alabandite.

Braunsteinkiesel. See Rhodonite and Garnet.

Braunstein, piemontischer. See Piedmontite.

Braunstein, grauer. See Pyrolusite and Manganite.

Braunstein, rother. See Rhodonite.

Braunstein, schwarzer. See Hausmannite.

Brauner eisenrahm. See Wad.

Brauner eisenstein. See Limonite.

Brauner glaskopf. See Limonite.

BRAVAISITE, *Mallard.* $R_2(Al_2)_2Si_9O_{26}+8H_2O$. Orthorhombic.

Brazil. See Pyrite.

Brazilian chrysolite. See Topaz.

Brazilian emerald. See Tourmaline.

Brazilian ruby. See Topaz.

Brazilian sapphire. See Topaz.

Brazilian sapphire. See Tourmaline.

Brazilian tourmaline. See Beryl.

Breadalbanite. See Amphibole.

Breccia. See Calcite.

Brecciated agate. See Quartz.

Bredbergite. See Garnet.

Breislakite. See Amphibole.

Breithauptite. See Covellite.

BREITHAUPTITE, *Haid.* Ni_3Sb_2. Hexagonal. Antimonial nickel; antimonnickel, *Strom.*; antimoniet of nickel; entomous cobalt pyrites, *Mohs*; hartmannite, *Chapman*.

Brennbare luft. See Hydrogen.

Breunnerite. See Magnesite.

Brevicite. See Natrolite.

BREWSTERITE, *Brooke.* $(SrBa)Al_2Si_5O_{16}+5H_2O$. Monoclinic. Diagonit, *Breit.*

Brewsterline. See Brewsterlinite.

BREWSTERLINITE, *Dana*. A fluid in crystal cavities; a new fluid in the cavities of minerals, *Brewster*; brewsterline; brewstoline, *Dana*.

Brewstoline. See Brewsterlinite.

Brianzoner krita. See Saponite.

Brick-red copper ore. See Cuprite.

Bright yellow loam saturated with petroleum. See Retinellite.

Bright white cobalt. See Cobaltite.

Brine. See Water.

Brisou. See Marsh gas.

Brithyne salt. See Glauberite.

Brittle silver glance. See Stephanite.

Brittle silver ore. See Stephanite.

Brittle sulphuret of silver. See Stephanite.

Broad-foliated gypsum. See Gypsum.

Brocatella di Sienna. See Calcite.

Brocatello. See Calcite.

BROCHANTITE, *Levy*. $Cu_4SO_4(OH)_6$. Orthorhombic. Brongniartine, *Huot.*; dystommalachite; königite, *Beud.*; königine, *Levy*; krisuvigit, *Forchh.*; sous sulfaté de cuivre; tetrasulfaté de cuivre; warringtonite, *Maskelyne*.

Broddbo-granat. See Garnet.

Broddbo-tantalit. See Tantalite.

Broggerite. $(ThYPbCe)U_2O_6$.

Bromargyrite. See Bromyrite.

Brome. See Bromine.

Bromic silver. See Bromyrite.

Bromid of silver. See Bromyrite.

Bromide of zinc. $ZnBr_2$. Bromure de zinc; zinc bromid.

BROMINE. Br. Brome.

Bromite. See Bromyrite.

BROMLITE, *Thomson*. $BaCaC_2O_6$. Orthorhombic. Alstonite, *Breit.*; barytocalcite, *Johnston*; barytocalcite en prism droit; bicalcareo carbonate of barytes, *Thoms.*

Bromsilber. See Bromyrite.

Bromure d'argent. See Bromyrite.

Bromure de zinc. See Bromide of zinc.

BROMYRITE, *Dana*. AgBr. Isometric. Argent bromure; bromargyrit, *Ramm.*; Bromic silver; bromid of silver; bromit, *Haid.*; bromsilber, *Germ.*; bromure d'argent; plata cornea amarilla melada, *Domeyko*; plata verde (Mex.), *Berth.*

Broncit. See Enstatite, Pyroxene, and Seybertite.

Brongnartine. See Brochantite.

BRONGNIARDITE, *Damour*. $PbAg_2Sb_2S_5$. Isometric. Brongniartit.

Brongniartine. See Glauberite.

Brongniartit. See Brongniardite

Bronzite. See Enstatite, Pyroxene, and Seybertite.

BROOKITE, *Levy*. TiO_2. Orthorhombic. Acide titanique; arkansite, *Shep.* eumanite, *Shep.*; jurinite, *Sorel.*; titane oxydé, *Haüy*; titanic acid, *Thomson*.

Brosite. See Dolomite.

Brossite. See Dolomite.

Brown asbestos. See Anthophyllite.

Brown coal. See Mineral coal.

Brown clay iron-stone. See Limonite.

Brown copper, Jameson. Anhyd carb. copper.

Brown dolomite. See Dolomite.

Brown hematite. See Limonite.

Brown hematite. See Göthite.

Brown iron cinder. See Pitticite.

Brown iron ore. See Limonite.

Brown iron ore. See Göthite.

Brown iron stone. See Göthite.

Brown iron stone. See Limonite.

Brown jasper. See Quartz.

Brown lead ore. See Pyromorphite.

Brown lead spar. See Pyromorphite.

Brown ochre. See Limonite.

Brown oxide of iron. See Limonite.

Brown quartz. See Quartz.

Brown spar. See Ankerite, Magnesite, Siderite, and Dolomite.

Brucite. See Zincite.

Brucite. See Chondrodite.

BRUCITE, *Beud.* $Mg(OH)_2$. Hexagonal. Amianthoid magnesite, *Nuttal*; amianthus, *Pierce*; eisenbrucit; gubr magnesien; hydrate de magnésie, *Beud.*; hydrate of magnesia, *Jikin*; magnesia hydrat, *Germ.*; magnésie native; magnésite amianthoide, *Nuttal*; manganbrucit; monoklinoëdrisches magnesia hydrat oder texalith, *Herm.*; native hydrate of magnesia; native magnesia, *Bruce*; nemalite, *Nutt.*; nemalith; rhombohedral kophone mica; siliceous hydrate of magnesia, *Thomson*; talc hydraté; talkhydrait, *Mohs*; talk-hydrat, *Leonh.*

BRÜCKNERELLITE, *Dana*

Crystalline. Georeti

tinsäure, *B*

Brun

See Pyrolusite.
E, *Moore*. $R_3P_2O_8+H_2O$, R= Monoclinic.
See Pyromorphite.
ılcedony. See Quartz.
ıga resin. See Bucaramang-

'ite, *Dana*. $C_{42}H_{66}O_{2\frac{1}{4}}$. Bu-ıga resin; resine de Bucara- *Boussing*.
. See Fibrolite.
te. See Allanite.
te. See Epidote.
ein. See Pyrite.
See Quartz.
See Krennerite.
[TE, *Dana*. NiO. Isometric. xyd; nickeloxydul, *Bergen*; rotoxide; protoxyd of nickel.
z. See Mimetite.
z. See Pyromorphite.
rerz. See Bornite.
rkies. See Bornite.
See Aurichalcite.
ılena. See Galenite.
e, *Adam*. An iodide of lead.
. See Rhodonite.
smuth.
herz. See Cerargyrite.
: ore. See Cerargyrite.
LITE, *Dana*. $C_{32}H_{64}O_4$. Crys- Bog butter, *Williamson*; , *Glock*.; butyrolimnodic acid, .
See Butyrellite.
nodic acid. See Butyrellite.
llet. Near Asphaltum.
See Amphibole.
ı ou bissolithe. See Amphi-

See Amphibole.
Thomson. Near Anorthite.
See Hydrous phosphate of a and lime.
[TE, *Dana*. $(NiCoMg)_3As_2O_8+$ Monoclinic. Nickel arsenate; haltige nickel-oxyd-magnesia,

te. See Clausthalite.
ɜ. See Clausthalite.
;. See Opal.
. See Cacoxenite.
MITE, *Dana*. $Fe_4P_2O_{11}+12$ "a; iron phosphate; ka- "phate of iron.

Cadmia. See Calamine.
Cadmiferous blende. See Sphalerite.
Cadmium blende. See Greenockite.
Cadmium ochre. See Greenockite.
Cadmium sulfuré. See Greenockite.
Cadmium sulphuret. See Greenockite.
Cadmia officinalis. See Calamine.
Cæruleum. See Azurite.
Cæruleum. See Chrysocolla.
Cæruleum berolinense nativum. See Vivianite.
Cæruleum montanum. See Azurite.
Cæruleum montanum. See Chrysocolla.
Cahoutchouc fossile. See Elaterite.
Caillou d'Alençon. See Quartz.
Cailloux de Médoc. See Quartz.
Cailloux du Rhin. See Quartz.
Cairngorm stone. See Quartz.
Cairngorum. See Quartz.
Calaite. See Turquois.
Calamine. See Hydrozincite and Smithsonite.
CALAMINE, *Brong*. $Zn_2SiO_4+H_2O$. Orthorhombic. Cadmia pt., *Plin.*; cadmia officinalis, *Wall*; electric calamine, *Smithson*; galmei pt., *Agric.*; gallmeja pt., *Wall*; galmey; hemimorphit, *Kenng.*; kieselerde; kieselgalmei; kieselgalmey, *Germ.*; kieselzinkerz, *G. Rose*; kieselzinkspath; lapis calaminaris, *Germ.*; mine de zinc vitriforme, *de Lisle*; prismatic calamine, *Jameson*; prismatic zinc baryte, *Mohs*; silicate of zinc, *Smithson*; siliceous calamine; siliceous oxide of zinc; smithsonite, *Greg & Lettsom*; vanuxemite; wagit, *Rados.*; zeolite of Brisgau, *Pell*; zinc calamine, *Brong.*; zinc oxydé pt., *H.*; zinc oxydé silicifère, *H.*; zinc silicate; zincum naturale calciforme, *Cronst.*; zincum spatosum cinereum compactum electricum, *v. Born.*; — — flavescens drusicum, *v. Born.*; zinkbaryt, *Mohs*; zinkglas, *Hausmann*; zinkglaserz, *Karst.*; zinkkieselerz; zinkoxyd, *Klapr.*
Calamine, electric. See Calamine.
Calamine, green. See Aurichalcite.
Calamine, siliceous. See Calamine.
Calamine verdâtre. See Aurichalcite.
Calamite. See Amphibole.
CALAVERITE, *Genth*. (AuAg) Te_2. Monoclinic.

Calc sinter. See Calcite.
Calc spar. See Calcite.
Calc tuff. See Calcite.
Calcaire. See Calcite.
Calcanalcime. See Analcite.
Calcareobarite. See Barite.
Calcareo sulfaté de strontiane. See Celestite.
Calcareo sulphate of baryta. See Barite.
Calcareo sulphate of strontian. See Celestite.
Calcareous barytes. See Barite.
Calcareous calamine. See Smithsonite.
Calcareous epidote. See Zoisite.
Calcareous iron ore. See Siderite.
Calcareous marl. See Calcite.
Calcareous mesotype. See Scolecite.
Calcareous ophiolite. See Serpentine.
Calcareous oxide of tungsten. See Scheelite.
Calcareous spar. See Calcite.
Calcareous spar tufa. See Calcite.
Calcareous uran mica. See Autunite.
Calcedoine. See Quartz.
Calcedony. See Quartz.
Calcedonyx. See Quartz.
Calciferrite. See Calcioferrite.
Calciform copper ore. See Malachite and Azurite.
Calcimangite. See Calcite.
Calcinitre. See Nitrocalcite.
Calciocelestite. See Celestite.

Calcioferrite. $(CaMg)_3(FeAl)_3(OH)_3(PO_4)_4 + 8H_2O$. Monoclinic. Calciferrite, *Bristow*; calcoferrit, *J. R. Blum.*

CALCITE, *Haid.* $CaCO_3$. Hexagonal. Calcaire; calcareous spar; carbonate de chaux; — of lime; calc spar; calx aerata, *Berg.*; chaux; — carbonatée; corn spar; dog-tooth spar; duttenstein; hog-tooth spar; kalchstein, *Agric.*; kalk; — spat; — spath; — stein; — sten; kevil, *Wall*; lapis calcarius, *Agric.*; lime carbonate; — stone; metastique, *H.*; nail-headed spar; pierre calcaire; ragoulki; saxum calcis, *Agric.*; spar; spatig kalkstein; spath calcaire.

I. CRYSTALLIZED OR FIBROUS VARIETIES AND THOSE CONTAINING OTHER CARBONATES OR IMPURITIES.

APHRITE, *Phillips*: Chaux carbonatée nacrée lamellaire, *Haüy*; earth foam, *Phillips*; écume de mer, *Brochant*; — de terre, *H.*; foaming earth, *Jameson*; rauchwacke, *Mohs*; schaum earth, *Jameson*; — erde, *W.*; — kalk; — spath, *Freies*; silvery chalk, *Kirw.*

ARGENTINE, *Kirw.*: Schiefer spath, *La Metherie*; slate spar, *Jameson*: spath schisteux.

DOLOMITIC CALCITE.

FERRO CALCITE.

FONTAINEBLEAU LIMESTONE: Calp, *Kirwan*; chaux carbonatée quartzifére; sandstein, crystallisirter, *Mohs*; siliceous limestone; silicecalce.

HISLOPITE, *Haughton.*

ICELAND SPAR: Dopple-spar, doppelspath; double refracting spar; spath d'Islande.

MANGANOCALCITE: Braunsteinkalk.

NATROCALCITE: Natron kohlensaures.

NEOTYPE, *Breit.*

PLUMBOCALCITE, *Johnst.*

PREUNNERITE, *Esm.*: Prunnerite, *Bristow.*

REICHITE, *Breit.*

SATIN SPAR: Atlas spath; faserkalk; fibrous calcite; kalkstein fasriger; lait de lune; sericolite; sericolith.

SPARTAITE, *Breit.*: Calcimangite, *Shep.*

STRONTIANO-CALCITE, *Genth.*

TÉTALITE, *Bert.*

II. LIMESTONES, COMPACT (HARD).

Black:

ANTHRACONITE, *von Moll*: Anthracolite; anthrakolite; anthrakonit; anthratolith; anthratonit.

LUCULLAN, *John*: Lucullite, *Jameson*: marmor lucullun, *Pliny*; marbre petit granite; — — antique; — Sainte-Anne.

NERO ANTICO: Marbre noir antique.

PORTOR: Egyptian marble; marbre portor.

PANNO DI MORTE: Death's robe.

Brecciated:

BRECCIA: Brèche d'Alet; — jaune du Tholonott; — universelle de Sainte Victoire; — violette; marbre brèche; — fleur de pêcher; puddingstone.

Fetid:

Bituminous limestone; ch
tée fetid; fetid car
limestone;
Wern.;

CALCITE—Continued.
mergel, *Hausm*; stinkstein; stinkstone; swinestone.
Gray:
Bird's-eye marble.
Green:
Sideroconite, *Hausm.*
Hydraulic:
Chaux hydraulique; hydraulic limestone; plaster cement.
Lithographic:
Axigraph; lithographic stone.
Red:
GRIOTTE: Marbre griotte.
HAEMATOCONITE, *Haus.* Hämatokonit.
LANGUEDOC MARBLE: Marbre du Languedoc; marbre incarnat; marble of Languedoc.
SARENCOLIN: Marbre Sarancolin; Sarancolin marble.
ROSSO ANTICO.
Ruin:
RUIN MARBLE: Cotham marble; landscape marble; marbre de Florence; — ruiniforme.
Shell, etc.:
ENCRINAL MARBLE.
MADREPORIC MARBLE: Madreporeite; madreporstein; muschel marmor.
NUMMULITIC MARBLE.
SHELL MARBLE: Fire marble; lumachella; lumachelle; —d'Astrakan; — opaline; lumachelli; lumachello.
PIETRA DURA.

III. LIMESTONE, COMPACT (SOFT).

CHALK: Chaux carbonatée crayeuse; craie; kreide; lapis Armenius; Spanish white.
MARL: Argiles calcaire; calcareous marl; marmes; mergel; mergelkalk.

IV. LIMESTONE, CONCRETIONARY MASSIVE.

OOLITE: Kalkstein schaaliger; oolith; oolithischer kalkstein; rogenstein.
PISOLITE: Drop-stones; erbenstein; erbsenstein; peastone; stony comfits.
SEPTARIA: Helmintholite (?); ludus helmontii; morpholites of Sweden; turtle stones; waxen vein.

V. LIMESTONE, GRANULAR.

Kalkstein körniger; marmor saccharoide.

CALCITE—Continued.
Architectural marble:
BARDIGLIO: Bardiole.
CIPOLIN: Marbre bleu turquin; marbre cipolin; marbre du Mont Hymette.
GALLIO ANTICO.
MANDELATO.
SIENNA: Brocatello; —di Sienna; marbre jaune de Sienne; marbre vert de Gênes.
TURQUOIS BLUE: Marbre bleu turquin.
VERDE ANTIQUE: Marbre verd antique.
CARRARA.
PARIAN: Lychnites; marbre de Paros. (*Statuary marble.*)
PENTELICAN: Marbre pentelique.

VI. LIMESTONE STALACTITIC, ETC.

AGARIC MINERAL: Bergmilch; chaux carbonatée spongieuse; lait de montagne; mœlle de pierre; montmilch; rock milk.
CALC SINTER: Beinbrech; beinbruch; beinwelle; calcareous sinter; calcareous spar tufa; calcareous tufa; calc tufa; -- tuff; confetto di Tivoli; dragées di Tivoli, inolite, *Gallitzen*; kalk sinter; — tuff; kunkur; lapis Tibertinus, *Vitruv.*; osteocollus, *Gesner*; peperino; travertine.
ROCK MEAL: Bergmehl; farina fossilis, *Bruck*; farine fossile; fossil farina.
STALACTITES AND STALAGMITES: Alabaster marble; — stone; alabastrites; alabâtre antique; — calcaire; cauliflower; chaux carbonatée concrétionée; Gibraltar stone; kalkalabaster; onychites; onyx; onyx marble; stalactites panniformes; stalagmitic marble; stony icicle.
CORAL: Corail.

Calcoferrit. See Calcioferrite.
Calcouranite. See Autunite.
Calcozincite. See Zincite.
Calderite. See Garnet.
CALEDONITE, *Beud.* $(PbCu)_2CO_3,SO_4$. Orthorhombic. Cupreous sulphatocarbonate of lead, *Brooke*; halbazurblei, *Rammelsberg*; halblazurblei; lead sulphato carbonate; paratomous lead baryte, *Haiding*; plomb sulfato carbonaté cuprifère, *Fr.*; schwefel und kohlensaures blei und kupfer, *Germ.*
Caliche. See Soda nitre.
Caliphite. See Limonite.

Calk. See Barite.

CALLAINITE, *Dana.* $Al_2P_2O_8+5\ H_2O$. Massive. Callaina? *Pliny*; callais, *Damour*; peganite of Arkansas; turquois pt.

Callaina (?). See Callainite.

Callais. See Turquois.

Callais. See Callainite.

Callaite. See Turquois.

Callimus. Stony matter in cavities of aetites.

CALOMEL. Hg_2Cl_2. Tetragonal. Chlormercur, *Germ.*; chlormerkur; chlorquecksilber; chlorure de mercure; corneous mercury, *Jameson*; dichloride of mercury, *Thom.*; horn mercury, *Woulfe*; horn quicksilver, *Phillips*; kalomel, *Haid.*; mercure chloruré, *Fr.*; mercure corné, *de Lisle*; mercure doux; mercure muriaté, *Brochant*; mercurial horn ore, *Jameson*; mercury chloride; mine de mercure cornée, *de Lisle*; muriate of mercury, *Phillips*; naturlich turpet; pyramidal pearl kerate, *Mohs*; quecksilber hornerz, *Wern.*; quicksilver chloride; saltsaures quecksilber oxydul.

Calp. See Calcite.

Calstronbarite. See Barite.

Calvonigrite. See Pyrolusite.

Calx aerata. See Calcite.

Calx fluorata. See Fluorite.

Calx martis phlogisto juncta. See Vivianite.

Calyptolite. See Zircon.

Campbellite. See Chalypite.

Campylite. See Mimetite.

Canaanite. See Pyroxene.

CANCRINITE, *G. Rose.* $H_2(Na_2Ca)_6Al_6Si_6C_2O_{25}$. Hexagonal.

Cand. See Fluorite.

Candite. See Spinel.

Canehlstein. See Garnet.

Cann. See Fluorite.

Cannel coal. See Mineral coal.

Cannelite. See Mineral coal.

Canoxenite, *Bischof.* SiO_2, Na_2O, Al_2O_3, CaO, CO_2, etc.

Cantalite. See Orthoclase.

Cantonite. See Covellite.

Cañutillo. See Stylotypite.

Caoutchouc fossile. See Elaterite.

Caoutchouc mineral. See Elaterite.

Capillary obsidian. See Orthoclase.

Capillary pyrites. See Millerite.

Capillary pyrolusite. See Pyrolusite.

Capillary red oxide of copper. See Cuprite.

Capillose. See Millerite.

Capinas. See Quartz.

Capnite. See Smithsonite.

Caporcianite. See Laumontite.

Capped quartz. See Quartz.

CAPPELENITE. $Y_2B_2SiO_{10}$. Hexagonal.

Carbocérine. See Lanthanite.

Carbona. See Cassiterite.

Carbonado. See Diamond.

Carbonat. See Diamond.

Carbonate de chaux prismatique. See Aragonite.

Carbonate de chaux rhomboédrique. See Calcite.

Carbonate de cuivre anhydre double d'urane et de chaux. See Liebigite.

Carbonate de fer et de magnésie. See Mesitite.

Carbonate de lanthane. See Parisite.

Carbonate de soude. See Irona.

Carbonate of barytes. See Witherite.

Carbonate of bismuth. See Agnesite.

Carbonate of copper. See Malachite and Azurite.

Carbonate of copper, anhydrous. See Brown copper.

Carbonate of copper, blue. See Azurite.

Carbonate of copper, green. See Malachite.

Carbonate of iron. See Siderite.

Carbonate of lime. See Calcite and Aragonite.

Carbonate of magnesia. See Magnesite.

Carbonate of magnesia and iron. See Magnesite.

Carbonate of manganese. See Rhodochrosite and Manganocalcite.

Carbonate of natron. See Trona.

Carbonate of soda. See Trona and Natron.

Carbonate of strontian. See Strontianite.

Carbonate of uranium. See Voglite and Zippeite.

Carbonate of zinc. See Smithsonite.

Carbonated muriate of lead. See Phosgenite.

Carbonato hidratado de nig Zaratite.

mantaire. See Diamond.
cate. See Rhodonite.
See Diamond and Graphite.
C ACID. CO_2. Aëriform car-
:id, *James.*; acide carbonique;
ɔou; feuer luft; gasförmige
äure, *Mohs*; kohlensäure,
; kohlensäures gas: schwa-
rath.
See Diamond.
osphate de fer. See Siderite.
rine. See Tengerite.
ate de manganèse. See Rho-

l carchedonii in Boëmorum
See Garnet.
. See Garnet.
us. See Corundum, Spinel,
ruet.
us alabandicus. See Garnet.
us carchedonius. See Garnet.
us ruber parvus. See Spinel.
us troezenius. See Garnet.
ɔd hydrogen gas. See Marsh

ius. See Garnet.
). See Dolomite.
. See Amphibole.
te. See Amphibole.
. See Wulfenite.
. See Chalcocite and Covel-

par. See Carminite.
ITE, *Dana.* $Pb_3Fe^{\prime\prime}{}_{10}(As_2O_8)_6$.
hombic. Carmine spar; car-
th, *Sandb.*; karminspath.
ith. See Carminite.
LITE, *Rose.* $KMgCl_3+6H_2O$.
e. Magnesia chloride; potash
e.
See Kaolinite.
See Labradorite.
. See Quartz.
See Quartz.
. Near Allophane.
. See Nephelite.
tana. See Amphibole.
LITE, *Wern.* $(AlFeMn)_4(SiO_4)_3$
$_2O$. Orthorhombic. Karpho-
karpholith. *Wern.*; pierre de
strohstein, *Werner.*
SIDERITE. $H_6Fe^{\prime\prime}{}_4(SO_6)_5$
H_2O. Amorphous. Karphosi-
Breit.; phosphate of iron.
lbite. See Thomsonite.

Carrara marble. See Calcite.
CARROLITE, *Faber.* $CuCo_2S_4$. Isometric.
Carthaginian carbuncle. See Garnet.
Carton de montagne. See Amphibole.
Caryat. See Quartz.
Caryinite, Lundström. $R_3As_3O_8$, R=PbMn Ca, etc. Massive. Karyinite.
Carystine. See Amphibole.
Cascholong. See Opal.
Cassinite. See Orthoclase.
CASSITERITE, *Beud.* SnO_2. Tetragonal. Black tin; carbona; Cornish tin ore, *Jameson*; crop tin; étain d'alluvion; — oxydé, *Haüy*; — vitreux, *de Born*; floran tin; kassiterit, *Haid.*; mine d'étain, *Brochant*; needle tin; ore of *Κασσίτερος, Gr.*; — — plumbum album, *Plin.*; oxide of tin, *Phillips*; oxyd of tin; peroxide of tin, *Thomson*; pierre d'étain, *Brochant*; pryan; — lode; — ore; — tin; pyramidal tin ore, *Mohs*; rain tin; rosin tin; seifenzinn; stannolite, *Necker*; stannum calciforme, *Bergm.*; — ferro et arsenico mineralisatum, *Wall*; stream tin; tin ore, *Allan*; — sand; — hämatites, *Kirwan*; — spar; — stone, *Jameson*; zinnerz, *Naum.*; zinnstein, *Werner*; zinnsten.
AINALITE, *Nordensk.*
STANNITE, *Breit.*
WOOD TIN: Étain de bois; fibrous oxide of tin; holzzinn; holzzinnerz; toad's eye tin.
Cassiterotantalite. See Tantalite.
Castellite. See Castillite.
Castellite. See Titanite.
Castellite. See Guanajuatite.
Castelnaudite. See Xenotime.
Castillite, Ramm. $(Cu_2Ag_2)(Cu_2Pb_2Zn_2Fe_2)S_3$. Massive. Castellite.
Castor. See Petalite.
Castorite. See Petalite.
CATAPLEIITE, *Dana.* $(Na_2Ca)ZrSi_3O_9+2H_2O$. Hexagonal. Katapleiit, *Weib.* and *Sjögren.*
CATASPILITE. $R_9Al_{10}Si_{12}O_{48}+3H_2O$. Pseudomorphous. Iolite hydrous; iolithe hydratée; kataspilit, *Iglestrom.*
Catlinite, Jackson. Pipe stone.
Cat sapphire. See Corundum.
Cat's-eye. See Quartz, Gypsum, Crocidolite, and Chrysoberyl.

Cat gold. See Mica.
Cat silver. See Mica.
Catalina stone from Newfoundland.
Cauliflower. See Calcite.
Cavolinite. See Nephelite.
Cawk. See Barite.
Cécérite. See Cerite.
Celadine-green. See Apatite.
CELADONITE. Fe_2O_3,SiO_2,K_2O,H_2O. Baldogée; green earth, pt., *Kirwan*; green earth of Verona; grünerde, *Hoffm.*; seladonit, *Glock.*; talc zographique, *Haüy*; terre verte; terre verte de Vérone, *de Lisle*; Verona earth, *Ansted*; veronite.
Celestialite. $C_xH_xS_x$.
Celestine. See Celestite.
CELESTITE. $SrSO_4$. Orthorhombic. Apotome; celestine, *Jameson*; cölestin, *Wern.*; fasriger schwerspath, *Schütz*; fibrous heavy spar; prismatoidal halbaryte, *Mohs*; schützite, *Gerh.*; schwefelsaure strontian; schwefelsaurer strontianit aus Pennsylvanien, *Klapr.*; schwerspath fasriger, *Schütz*; sicilianite, *Lenz.*; strontiane sulfatée, *Dolom.*; strontia sulphate; sulphate of strontia; zölestin, *Wern.*
BARYTOCELESTITE, *Thoms.*: Barytocelestine; baryto cölestin; baryto sulphate of strontian, *Thoms.*
CALCIOCELESTITE: Calcareo sulphate of strontiane.
Celestobarite. See Barite.
Cellular pyrites. See Pyrite and Marcasite.
Cellular quartz. See Opal.
Cellular quartz. See Quartz.
Cement copper. See Copper.
Cendres noires. See Mineral coal.
Centrallassite, How. Near Okenite. Cyanolite, *How.*
Ceracahtes. See Quartz.
CERARGYRITE. AgCl. Isometric. Argent corné, *Brochant*; argent muriaté, *Brochant*; argento acido salis mineralisatum, *Cronst.*; argentum cornu pellucido simile, *Germ.*; argentum rude jecoris colore, lucem corneam habens, *G. Fabricius*; argentum sulfure et arsenico mineralisatum, *Wall*; argyroceratite, *Glock.*; buttermilcherz, *Klapr.*; chloride of silver, *Allan*; chlor-silber, *Germ.*; chlorure d'argent, *Fr.*; corneous silver, *Kirwan*; glaserz durchsichtig wie ein horn in einer lantern, *Mattheius*; hexahedral corneous silver, *Jame.*; hexahedral pearl kerate, *Mohs*; hornerz, *Cronst.*; hornfarbsilber, *Gener.*; horn ore, *Jameson*; hornsilber, *Haus.*; horn silfver, *Wall*; horn silver, *Phill.*; kerargyre, *Beud.*; kerargyrite, *Dana*; kerat, *Haid.*; mine corné, *Beud.*; minera argenti cornea, *Wall*; muriate of silver, *Phillips*; pearl kerate, *Mohs*; plata cornea blanca, *Domeyko*; silberhornerz, *Germ.*; silberkerat, *Germ.*; silver chloride; silver muriate, *H.*
Cerasine. See Phosgenite and Mendipite.
Cerasite. See Mendipite.
Cerastite. See Mendipite.
Ceraunite. See Jadeite.
Ceraunian sinter. See Quartz.
Cerbolite. See Boussingaultite.
Cereolite. See Cerolite.
Cerererz, untheilbares. See Cerite.
Cérérine. See Allanite.
Cererit. See Cerite.
Cérérite. See Allanite.
Cereroxydulkohlensaures. See Lanthanite.
Cererum. See Cerite.
Cerine. See Allanite and Cerite.
Cerinite. See Heulandite.
Cerinstein. See Cerite.
CERITE. *Phillips.* $(Ce_2La_2Di_2)SiO_5+H_2O$. Orthorhombic. Cererz, untheilbares, *Mohs*; cererite, *Brooke* and *Miller*; cerine, *Hising.* and *Berz.*; cerinstein, *Wern.* and *Berz.*; cerium enny metal, etc., *Gehlen.*; cerium oxidé silicifère; cérium oxydé siliceux, *H.*; — — — rouge; cérium oxydé silicifère, *Haüy*; cerium silicate; ferricalcite; ferrum calciforme terre quamdam incognita intime mixtum, *Cronst.*; indivisible cerium ore, *James.*; kiesel-cerit, *Germ.*; lanthan-cerium-scapolite; lanthano-cerit, *Herm.*; ochroit, *Klapr.*; rhombohedral cerium ore, *Mohs*; silicate of cerium, *Wollast.*; siliceous oxide of cerium; siliciferous oxide of cerium; titaniferous cerite, *Laugier*; tungsten von Bastnäs, *Cronst.*; uncleavable cerium ore, *James.*
Cerium carbonate. See Lantha-

dote. See Allanite.
rttria fluatés. See Yttroce-
ıt. See Fluocerite.
ıtée. See Fluocerite.
atée basique. See Fluocer-
ɔrid. See Fluocerite.
ıro-fluatée. See Fluocerine.
:. Ce_2O_3.
, indivisible. See Cerite.
dé silicifère. See Cerite.
dé silicoux rouge. See Ce-
ydé siliceux. See Cerite.
rdé siliceux noir. See Allan-
ydé silicifère rouge. See Ce-
ydé yttrifère. See Yttroce-
ɔsphate. See Monazite.
cate. See Cerite.
E. $H_2Mg_2Si_2O_7+H_2O$. Mas-ereolite; cerolith, *Glock.*; ke-*reit.*; kerolith, *Breit.*
See Cerolite.
See Lanthanite.
See Cerussite.
:e Cerussite.
See Cerussite.
tiva. See Cerussite.
TE, *Haid.* $PbCO_3$. Ortho-:. *Ψιμίθιον, Theophr.*; acru-ack lead ore, *Jameson*; black ar; bleicarbonat; bleierde, — zerreibliche, *Mohs*: blei-e; bleispath, *Wern.*; bly — spat: — spath; carbonate *Phillips*: cernsa, *Plin.*: — *Cronst.*: — — ex agro, Vicen-*num*; cerise, *Bend.*: cerusite, liprismatic lead baryt, *James.*: atic lead spar: diprisma-bleibaryt, *Mohs*: earth; car-ol lead: — spar: hemi-ischer [illegible]: [illegible], *Leon-*[illegible]

CERUSSITE — Continued.
bleierz, *Werner*; spatum plumbi; white lead ore, *Jameson*; — — spar; weissbleierz, *Wern.*; zinc bleispath, *Karst.*; zinc lead spar, *Karst.*
Certain stones that burn. See Mineral coal.
Cervantite. See Stibiconite.
CERVANTITE, *Dana.* SbO_2. Orthorhombic. Acide antimonieux, *Dufr.*; antimoine oxydé terreux, *Haüy*; antimonial ochre, *Phillips*; antimon ocher pt., *Germ.*; antimon ochre; antimon oker, *Leonhard*; antimonoso-antimonic oxyd; antimonous acid; antimony ochre pt., *Jameson*; gelb antimonerz, *Breit.*; oxide of antimony, *Phillips*; prismatic white antimony, *Jameson*; spiessglanzocher, *Haus.*; spiessglanzokker pt., *Karst.*; stibiconise, *Beud.*; weisspeissglanz-erz.
Ceylanite. See Spinel.
Ceylonite. See Spinel.
Ceylon garnet. See Garnet.
Ceylon tourmaline. See Chrysolite.
Ceylon zircon. See Zircon.
Chabacit. See Chabazite.
Chabasie. See Chabazite.
Chabasie de soude. See Gmelinite.
Chabasin. See Chabazite.
Chabasite. See Chabazite.
Chabazie. See Chabazite.
CHABAZITE, *Dana.* $(H_2K_2)CaAl_2Si_6O_{12}+6H_2O$. Hexagonal. Chabacit, *Haus.*; chabasie, *H.*; chabasin, *Karst.*; chabasite, *Bosc d'Antic*; chabazie, *Bosc d'Antic*; cubicite; glottalite; kuboi-zit, *Weiss*; rhombohedral kouphone spar, *Mohs*; rhombohedral zeolite, *James.*; schabasit, *Wern.*; würfelzeo-lith pt., *Wern.*; zeolite en cubes, *Faujas*; zeolithus albus cubicus In-landiæ, *v. Born.*; zeolith cubique.
ACADIALITE. *Alg.* and *Jack.*: Acadiolite, *Thom.*; acadiolithe; arcadiolite.
DORASITE, *Thom.*
HAYDENITE, *Clearel.*
PHACOLITE: Phakolit, *Breit.*; phako-lith.
Chalcanthil. See Chalcanthite.
CHALCANTHITE $CuSO_4+5H_2O$. Triclinic. Χαλκάνθος; atramen-tum cæruleum, *Agric.*, *Gesner*; blue-stone; blue vitriol, *Allan*; chalcan-

CHALCANTHITE—Continued. thil, *Glock.*; chalcanthum pt., *Dioscor.*, *Plin.*; chalkanthit, *Kobell*; copper sulphate, *Phill.*; copper vitriol, *Jameson*; couperose bleue, *Fr.*; cuivre sulfaté, *H.*; cyanose, *Beud.*; kupfervitriol, *Germ.*; prismatic vitriol, *James.*; sulphate of copper, *Phillips*; tapiolite (?); tetarto prismatic vitriol salt, *Mohs*; vitriol; vitriol de cuivre; vitriol of copper; vitriolo de Rome, *Ital.*; vitriolum Cupri, *Wall*; vitriolum Cypri, *Wall*; vitriolum veneris, *Wall.*

Chalcanthum. See Melanterite.

Chalcanthum. See Chalcanthite.

Chalcedon. See Quartz.

Chalcedonified wood. See Quartz.

Chalcedonis. See Quartz.

Chalcédony. See Quartz.

Chalchihûitl. See Turquois.

Chalchite. See Turquois.

Chalcites. See Copperas group.

Chalcitis. See Copperas group.

Chalcitis. See Chalcopyrite.

CHALCOCITE, *Dana*. Cu_2S. Orthorhombic. Æs rude plumbei coloris pt., *Germ.*; bisulfuré de cuivre, *Dufren.*; chalcosine, *Beud.*; chalkosin, *Beud.*; copper glance, *Jameson*; copper sulphuret; cuivre noir; — sulfuré, *Breit.*; — — hépatique, *Haüy*; — vitreux, *Brochant*; cupreine; cuprum vitreum, *Wall*; cuprum sulphure mineralisatum pt.; cyprit, *Glock.*; gray ore; kopparglas; koppar malm; kupferglas, *Wern.*; kupferglaserz, *Agric.*; kupferglanz, *Haid.*; kuprein, *Breit.*; nail-headed copper ore, *Cornwall*; prismatic copper glance, *Mohs*; redruthite, *Nicol*; sulphuret of copper, *Allan*; variegated sulphuret of copper, *Phillips*; vitreous copper, *Phillips.*

CUIVRE SPICIFORME, *H.*: Frankenberg corn ears; Hessian corn ears; kornähren Frankenberger.

CARMENITE, *Hahn.*

CUPROPLUMBITE.

DIGENITE, *Breit.*

Chalcodite. See Stilpnomelane.

Chalcolite. See Torbernite and Autunite.

CHALCOMENITE. $CuSeO_3+2H_2O$. Monoclinic.

Chalcomiclite. See Bornite.

CHALCOMORPHITE, *v. Rath.* $CaAl_2SiO_6+H_2O$. Hexagonal.

Chalcophacite. See Liroconite.

CHALCOPHANITE. $(MnZn)Mn_2O_5+2H_2O$. Hexagonal.

CHALCOPHYLLITE. $HCu_4AsO_7+3\frac{1}{2}H_2O$. Hexagonal. Blättriges olivenerz; chalkophyllit, *Breit.*; copper mica, *Jameson*; cuivre arseniaté, *Haüy*; cuivre arseniaté hexagonal lamelliforme, *Haüy*; cuivre arseniaté lamelliforme, *H.*; cuivre micacé; cypronica, *Necker*; euchlore malachite; euchlore mica, *Mohs*; foliated arseniate of copper, *Cleaveland*; hemi prismatic copper mica, *Man.*; hexagonal arseniate of copper; kupferglimmer, *Karst.*; kupferphyllit, *Breit.*; prismatic copper mica, *Jameson*; rhombohedral arseniate of copper, *Mohs*; rhomboidal arseniate of copper, *Phill.*; rhombohedral euchlore malachite, *Mohs*; rhombohedral euchlore mica, *Mohs*; tamarite, *Brooke* and *Miller.*

CHALCOPYRITE, *Beudant.* $CuFeS_2$. Tetragonal. Blistered copper ore, *Cornish*; chalcitis pt., *Pliny*; chalcopyrites, *Hencle* and *Wall*; chalkopyrite; copper pyrites, *Jameson*; copper sulphuret; cuivre hexagonal lamelliforme; cuivre jaune; cuivre pyriteux, *Haüy*; cuivre sulfuré hépatique, *Haüy*; cuprum sulphure et ferro mineralisatum, *Wall*; geelkis oder kupferkis, *Agric.*; gelf, *Kirwan*; gelferz; gul kopparmalm, *Wall*; ispadran, *Persian*; kupferkies, *Gesner*; octahedral copper pyrites, *James.*; peacock copper, *Cornish*; pyramidal copper pyrites, *Mohs*; pyrite cuivreuse, *Fr. trl.*; pyrites pt., *Plin.*; pyrites aerosus pt., *Agric.*; pyrites aureo colore, *Germ.*; pyrites flavus, *Henckel*; pyritous copper; terre jaune; towanite, *Brooke* and *Miller*; variegated vitreous copper, *Phillips*; yellow earth, *Jameson*; yellow copper; yellow copper ore, *Kirwan*; yellow copper pyrites, *James.*; yellow iron ore; yellow ore.

Chalcopyrites. See Chalcopyrite.

Chalcopyrrhottite, *Blomstrand.* $Fe_4Cu_3S_7$. Massive.

CHALCOSIDERITE. CuI_8H_2O. Triclinic.

ee Chalcocite.
BITE, *Glock.* $CuSbS_2$.
bic. Antimonial copper; t, *Glock.*; copper and antiphide; copper and antiiuret, *Huot*; cuivre anti-*Dufren.*; kupferantimon-.; rosenite; rosite, *Huot*; uivre et antimoine, *Rose*; of copper and antimony, sbergite, *Nicol.*
. See Cuprite.
Thomsonite.
Thomsonite.
lcite.
See Chalcanthite.
Near Penninite.
ee Autunite and Torber-
ee Autunite and Torber-
See Chalcophyllite.
See Chalcopyrite.
See Dufrenite.
See Chalcocite.
See Chalcostibite.
. See Cuprite.
e Siderite.
. Fe_2C. Campbellite,
n and nickel alloy.
E, *Berth.* $FeAl_2SiO_6+H_2O$.
. Baralite, *Dana*; baralite, *Huot*; berthierine, silicate; mine de fer grains agglutinés, *Gueyrai* de fer en grains, *Berth.*
See Forbesite (?).
ina. $Ag_4(AsSb)_3$. Arsenio ore, *Domeyko.*
ee Meteorites.
e. See Mineral coal.
See Smaltite.
lcite.
ro sulfatée. See Anhy-
ine nativ. See Valentin-
té anhydre. See Berze-
siliceuse. See Datolite.
atée. See Calcite and
atée brunissante. See
Chaux carbonatée concrétionnée. See Calcite.
Chaux carbonatée coralloïdea. See Aragonite.
Chaux carbonatée crayeuse. See Calcite.
Chaux carbonatée durée. See Aragonite.
Chaux carbonatée ferrifère. See Siderite.
Chaux carbonatée ferrifère perlée. See Dolomite.
Chaux carbonatée ferro-manganesifère. See Ankerite.
Chaux carbonatée fetide. See Calcite.
Chaux carbonatée lente. See Dolomite.
Chaux carbonatée magnesifère. See Dolomite.
Chaux carbonatée nacrée lamellaire. See Calcite.
Chaux carbonatée quartzifère. See Calcite.
Chaux carbonatée spongieuse. See Calcite.
Chaux chlorurée. See Chlorocalcite.
Chaux d'antimoine. See Valentinite and Senarmontite.
Chaux datolit. See Datolite.
Chaux fluatée. See Fluorite.
Chaux hydraulic. See Calcite.
Chaux nitratée. See Nitrocalcite.
Chaux oxalatée. See Whewellite.
Chaux phosphatée. See Apatite.
Chaux phosphatée, quartzifère. See Apatite.
Chaux phosphatée verte. See Apatite.
Chaux phosphatée terreuse. See Apatite.
Chaux sous arseniatée. See Pharmacolite.
Chaux sulfatée. See Gypsum.
Chaux sulfatée crystallisée. See Gypsum.
Chaux sulfatée epigene. See Anhydrite.
Chaux sulfatée quartzifère. See Anhydrite.
Chaux sulfatine. See Anhydrite.
Chaux tungstatée. See Scheelite.
Cheleusite. See Smaltite.
Cheleutit. As,Co,Fe,Ni. Bismuth cobalterz.
Chelmsfordite. See Wernerite.
Chelmsfordite. See Wollastonite.

CHENEVIXITE, *Adam.* $H_8Cu_3As_2Fe_2O_{14}$. Massive.

Chenocoprolite. See Pitticite.

Chenocoprolite, Dana. (Joachimsthal is yellow crust on smaltite. Andreasberg is mixture of SbAsFe.) Ganomatite, *Breit.*; gänseköthigerz; goose-dung-ore.

Cherokine. See Pyromorphite.

Cherry coal. See Mineral coal.

Chert. See Quartz.

Chessy copper. See Azurite.

Chessylite. See Azurite.

Chesterlite. See Microcline.

Chesterlith. See Microcline.

Chiastolite. See Andalusite.

Chiastolithe. See Andalusite.

CHILDRENITE, *Levy.* $H_2(FeMnCa)AlPO_6+H_2O$. Orthorhombic. Eosphorite.

Chileite. See Goethite.

Chileite, Kenng. $Pb_6Cu_6V_2O_{18}$. Amorphous. Cuprovanadate; lead and copper vanadate; vanadate of lead and copper, *Domeyko*; vanadinate cupreous; vanadinate of lead and copper; vanadinkupferbleierz, *Germ.*

CHILENITE, *Dana.* Ag_6Bi. Amorphous. Aleacion de plata con bismuto, *Domeyko*; argent bismuthique; plata bismutal, *Domeyko*; silberwismuthglanz; wismuthsilber; wismuthsilbererz, *Selb.*

Chilesalpeter. See Soda niter.

Chiltonite. See Prehnite.

Chimborazite. See Aragonite.

CHIOLITE. $Al_2Na_3F_9$. Tetragonal. Chiolith, *Herm.*; chionit; nepholite, *Watts.*

Chiolith. See Chiolite.

Chiolith. See Chodneffite.

Chionit. See Chiolite.

Chivialite. See Chiviatite.

CHIVIATITE, *Ramm.* $(Cu_2Pb)_2Bi_{12}S_{11}$. Crystalline. Chivialite.

Chladnite. See Enstatite.

Chloanthite. See Smaltite.

Chloralluminite, Scacchi. $Al_2Cl_6+H_2O$.

Chlorammonium. See Sal Ammoniac.

Chlorapatite. See Apatite.

Chlorastrolite. See Prehnite.

Chlorastrolith. See Prehnite.

Chlorblei. See Cotunnite.

Chlorbleispath. See Phosgenite.

Chlorbromsilber. See Embolite.

Chlorcalcium. See Chlorocalcite.

Chlore. See Chlorine.

Chloride of ammonium. See Sal Ammoniac.

Chloride of iron. See Molysite.

Chloride of lead. See Mendipite.

Chloride of manganese. See Scacchite.

Chloride of potash. See Sylvite.

Chloride of silver. See Cerargyrite.

Chloride of magnesium. See Chloromagnesite.

Chloride and sulphate of soda.

Chloride and sulphate of soda and potash.

CHLORINE. Cl. Chlore.

Chlorit blanche. See Penninite.

Chloritspath. See Chloritoid.

Chlorite. See Penninite, Ripidolite, and Prochlorite.

Chlorite blanche de Mauléon. See Leuchtenbergite.

Chlorite earth. See Ripidolite.

Chlorite, ferrugineuse. See Delessite.

Chlorite slate. See Chlorite.

Chlorite spar. See Chloritoid.

Chlorites lamellosus. See Prochlorite.

CHLORITOID, *Rose.* $H_2FeAl_2SiO_7$. Monoclinic. Barytophyllit, *Glock.*; chlorite spar, *Erdmann*; chloritspath, *Fiedler*; masonite, *Jackson*; salmite; sismondine, *Delesse.*

Chlorkalium. See Sylvite.

Chlormagnesite. See Chloromagnesite.

Chlormercur. See Calomel.

Chlormerkur. See Calomel.

Chlorolithine. Altered feldspar (?).

Chlorquecksilber. See Calomel.

Chlorselenquecksilber.

Chlorsilber. See Cerargyrite.

Chlorspath. See Mendipite.

Chlorobromure d'argent. See Embolite.

CHLOROCALCITE, *Scacchi.* $CaCl_2$. Isometric. Chaux chloruré, *Dufren.*; chlorcalcium; chlorure de calcium, *Dufren.*; hydrochlorate de chaux, *Dufren.*; hydrophilite, *Adam.*; muriate de chaux, *Dufren.*

Chlorocarbonate of lead. See Phosgenite.

CHLOROMAGNESITE, *Scacchi.* $MgCl_2+xH_2O$. Chloride of magnesium; chlormagnesite; magnesia chloride; magnesie chlorurée; magnesiatée.

Chloromelan. See Cronstedt.

, Al,Na,Fe,Ca,SiO_2.
L. *Bernhardi.* $Fe_2Si_3O_9+5$
ompact. Fettbol, *Freies.*;
, *Krantz*; green iron earth,
lloysite of St. Jean de Cole;
Breit.; unghwarite, *Glock.*;
, *Glock.*
e. See Glauconite.
AEITE, *Macculloch.* Fe
O. Massive. Hydrosilicite.
. See Fluorite.
rit. See Glauconite and
e.
site. See Glauconite.
e. See Fahlunite.
. See Spinel.
IONITE, *Scacchi.* K_2SO_4+
rystalline.
LE, *Frenzel.* $Cu_3As_2O_8$
Orthorhombic.

gent. See Cerargyrite.
calcium. See Chlorocalc-

nercure. See Calomel.
sodium. See Halite.
ble de cuivre et de plomb.
lite.
ITE, *Dana.* $AlNaF_4$. Tet-
Chiolith, *Worth* and *Chodnef*;
e; chodnewit; cryolite,
pholite; nipholith, *Naum.*
See Chodneffite.
See Chodneffite.
RSENITE, *Dana.* Mn_5As_2
O. Granular Chondroar-
ndroarsenit, *Igelström.*
DITE, *d'Ohsson.* $Mg_3Si_2O_{14}$.
e. Brucite, *Gibbs*; condro-
ly; fluate of magnesia,
nosilicate of magnesia, *Sey-*
mi prismatic chrysolite,
umite, *Bourn.*; maclureite,
naclurite; silicate of mag-
iron, *d'Ohsson.*
TE, *Dana.* $R''_{18}R'''_8(SiO_4)_{18}$
Massive. Chonikrit, *v.*
taxoit, *Arppe*; metaxorite.
See Chonicrite.
See Chrismatite.
TITE. $C_{12}H_{32}$. Chrismatin,
natchettin, *Wagner*; ozocer-
rit, *Breslau*; rockbutter.
See Phillipsite and Anor-

Christophite. Zn_2FeS_3. Chrystophite, von *Lasaulx.*
Chromate de plomb brun. See Vanadinite.
Chromate of iron. See Chromite.
Chromate of lead. See Crocoite.
Chromate of lead and copper. See Vauquelinite.
Chromblei. See Crocoite.
Chrombleispath. See Crocoite.
Chromchlorit. See Penninite.
Chromdiopsid. See Pyroxene.
Chrome augite. See Pyroxene.
Chrome ceylonite. See Spinel.
Chrome garnet. See Garnet.
Chrome iron. See Chromite.
Chrome magnesia mica. See Biotite.
Chrome mica. See Biotite.
Chrome ochre, Halle. $(Al_2Fe_2Cr_2)_2Si_3O_{12}$. Anagenite; chromeoxyde; chromocker; chromocre; oxide of chrome; oxydé chromique.
Chrome oxyde. See Chrome ochre.
Chrome sulfuré. See Shepardite.
Chromeisenerz. See Chromite.
Chromeisenstein. See Chromite.
Chromglimmer. See Biotite.
Chromglimmer. See Muscovite.
Chromic iron. See Chromite.
CHROMITE, *Haid.* $FeCr_2O_4$. Isometric. Chromate of iron, *Phillips*; chromeisenerz, *Naum.*; chromeisenstein; chromic iron; chromiron; chromoferrite, *Chap.*; chrompicotite, *Petersen*; chromsaures eisen; eisenchrome, *Beud.*; fer chromaté, *H.*; fer chromaté aluminense, *Vauq.*; fer chromé; octahedral chrome ore, *Mohs*; siderite chromifère, *Necker*; siderochrome, *Huot.*
IRITE, *Thom.*
MAGNOCHROMITE, *Bock.*
Chromochlorite. See Penninite.
Chromochlorite. See Serpentine.
Chromocker. See Chrome ochre.
Chromocre. See Chrome ochre.
Chromoferrite. See Chromite.
Chromowulfenite. See Wulfenite.
Chromphosphorkupferbleispath. See Vauquelinite.
Chrompicotite. See Chromite.
Chromsaures blei. See Crocoite.
Chromsaures eisen. See Chromite.
Chromspinell. See Spinel.
Chryolith. See Cryolite.

Chrysberil. See Chrysoberyl.

CHRYSOBERYL. $BeAl_2O_4$. Orthorhombic. Alaunerde; kieselerde, *Klapr.*; alexandrite, *Nordenskiöld*; aluminate of glucina, *Seyb.*; cat's-eye; chrysberil; chrysoberyll, *Karst.*; chrysolithe oriental; chrysopal; cymophane, *H.*; krisoberil, *Wern.*; oriental chrysolite; prismatic corundum, *Mohs.*

Chrysoberyll. See Chrysoberyl.

Chrysoberyllus. See Beryl.

Chrysocolla. See Borax and Malachite.

Chrysocolla. See Lazulite.

CHRYSOCOLLA, *Theoph.* $CuSiO_3+2H_2O$. Cryptocristalline. Beaumontite, *Jackson*; bleu de cuivre; — de montagne; chrysocolle, *Brcch.*; chrysokoll; cæruleum pt., *Agric.*; — montanum, *Wall*; copper green, *Jameson*; — silicate; cuivre carbonaté vert pulverulent, *H.*; — hydraté siliceux; — hydrosiliceux, *H.*; — hydraté silicifère; — hydro siliceux, *H.*; eisenschüssig kupfergrün, *Wern.*; hydrophane cuivreux; hydrosilicite noir de Chile; iron shot copper green, *Jameson*; kieselkupfer, *Klapr.*; — malachit, *Hausm.*; kupfer bleu; — braun; — grün; llana, *Chili*; mountain blue; — green pt., *Kirwan*; pilarite; siliceous copper; staphyline malachite, *Mohs*; uncleavable staphyline malachite, *Mohs*; vert de cuivre, *Brochant*; — de montagne; viride.

ASPEROLITE, *Herm.*

CYANOCHALCITE, *Herm.*

DEMIDOFFITE: Demidovite, *Nordensk.*; demidowite.

DILLENBERGITE.

HEPATINERZ, *Breit.*: Copper pitchblende; hepatin ; kupferpecherz, *Hoffm.*; pechkupfer, *Haus.*; pitchy copper ore.

SOMERVILLITE, *Dufren.*

Chrysocolle. See Chrysocolla.

Chrysokoll. See Chrysocolla.

Chrysolite. See Prehnite and Topaz.

CHRYSOLITE, *Beck.* $(MgFe)_2SiO_4$. Orthorhombic. Beryllus pt., *Vet.*; bottle stone of Moravia; Ceylon tourmaline; chrysolite commune; — ordinaire, *de Lisle*; chrysolithe des volcans, *Faujas*; gemma pellucidissima coloré viridi subflavo in igne fugaci, *Wall*; glinkit, *Romano*: grenat ferrifère; gulgrön topas, *Cronst.*; hyalosiderite, *Walchure*; krisolith, *Wern.*; krysolith; meteorolivin; neochrysolite; olivine, *Werner*; olivinöide, *Shep.*; oriental chrysolite; peridote, *H.*; — granuliforme, *H.*; — meteorique; — olivine; — ordinaire, *d'Argenville*; — titanifère; prismatic chrysolite, *Mohs*; smaragdus, *Vet.*; topazos pt., *Pliny.*

CHUSITE, *Wern.*

LIMBELITE, *Sauss.*

SIDEROCLEPTE, *Sauss.*

Rocks.

Dunyte (dunite); olivenfels; pieryte; topazion.

Chrysolite commune. See Chrysolite.

Chrysolite de Saxe. See Topaz.

Chrysolite du Brésil. See Beryl.

Chrysolite du cap. See Prehnite.

Chrysolite, iron. See Fayalite.

Chrysolite, iron manganese. See Iron manganese chrysolite.

Chrysolite of Brazil. See Tourmaline.

Chrysolite ordinaire. See Chrysolite.

Chrysolite orientale. See Chrysoberyl.

Chrysolite, titaniferous. See Fosterite.

Chrysolite, white. See Forsterite.

Chrysolithe commune. See Chrysolite.

Chrysolithe des volcans. See Chrysolite.

Chrysolithe du cap. See Prehnite.

Chrysolithe orientale. See Chrysoberyl.

Chrysomelan. See Spinel.

Chrysolithus. See Zircon (?).

Chrysolithus. See Beryl.

Chrysolithus. See Topaz.

Chrysolithus veterum. See Topaz.

Chrysopal. See Chrysoberyl.

Chrysophane. See Seybertite.

Chrysoprase. See Quartz and Beryl.

Chrysoprase earth. See Pimelite.

Chrysopraserde, grüne. See Pimelite.

Chrysoprasius. See Beryl.

Chrysotile. See Serpentine.

Chrystophite. See Christophite.

Churchillite. See Mendipite.

CHURCHITE, *Williams.* $(CeCa)(PO_4)_2+2H_2O$. Monoclinic. Hydrated cerous phosphate, *Church.*

See Chrysolite.
h. See Andalusite.
e. Fe,SiO_2.
a. See Cyanochroite.
ane. See Menaccanite.
See Cimolite.
E, *Klapr.* $H_6Al_4(SiO_3)_9+3\,H_2$
orphous. Κιμωλία, *Theoph.*; , *Plin.*; cymolite; hunterite, n; terra cimolita; — lemnia, .; terre sigillée.
See Cinnabar.
ıbido. See Ammiolite.
See Orthoclase.
ıR. HgS. Hexagonal. Κιννα- *Theophr.*; Αμμιον, *Dioscor.*; ober, *Agric.*; cinabre; cinna- fleur de cinabre; mercur- mercure sulfuré, *H.*; mercury ; — sulphuret; merkurblende; , *Vitruv.*; — nativum, *Agric.*; vermillion; peritomous ruby *Mohs*; quicksilver sulphuret; l spar; schwefel quecksilber; et of mercury, *Phillips*; ver- ; zinnober, *Wern.*
CINNABAR, *Phillips*: Bitumin- nabar; corallinerz, *Wern.*; re; hepatic mercurial ore, ; idrialine cinnabar; koral- lebererz, *Wern.*; liver ore of ; liver stone; mercure he- ; — sulfuré bitumineux; mer- epatic ore, *Jameson*; — liver *eson*; mine de mercure he- , *Brochant*; quecksilberbrand- quecksilberlebererz, *Wern.*; lver liver ore; stink zinnober,

bituminous. See Cinnabar.
. See Cinnabar.
stone. See Garnet.
ee Calcite.
See Calcite.
e. See Quartz.
s. See Ozocerite.
e de Moldavie. See Zietrisi-

TE. $Al_4Ca_3P_6O_{12}+3\,H_2O$. Com- Kirrolith, *Blomstrand.*
ee Quartz.
e Quartz.
See Chladnite.
andb. Cu,As,Sb,S. Ortho- c.
linus. See Zircon.

CLAUDETITE, *Dana.* As_2O_3. Ortho- rhombic. Prismatic arsenious acid, *Claudet*; rhombarsenite.
Claussenite. See Gibbsite.
Clausthalie. See Clausthalite.
CLAUSTHALITE. PbSe. Isometric. Cacheutaite, *Adam*; cacheutite, *Domeyko*; clausthalie, *Beud.*; cobaltic galena, *James.*; kobaltbleierz, *Hausm.*; kobaltbleiglanz; lead selenides; plomb sélénié; plomb seleniuré, *Levy*; selenblei, *Zinken*; selencobalt lead, *Nicol*; selenkobaltblei, *Rose*; selenic silver; selenide of lead; selenide of lead and copper; seleniuret of lead; tilkerodite, *Haid.*
Clay. Adhesive clay; adhesive slate; argile endurcie; — feuilletée; — glaise; argiles à potier; — figulines; — schisteuse novaculaire; argillolite, *Brong.*; black chalk; indurated clay, *Kirw.*; joketan, *Breit.*; laehm; laeim; leutrite; sartor; steinbutter; stone butter; stone marrow; thonstein; topferthon; tripal.
Clay iron ore. See Siderite.
Clay iron stone. See Hematite.
Clay iron stone. See Siderite.
CLAYITE, *Taylor.* Pb, Cu, As, Sb, S. Isometric.
Cleavelandite. See Albite.
Cleiophane. See Sphalerite.
CLEVEITE, *Nordens.* (U, Pb) (U, Y, Fe)$_2O_4+H_2O$. Isometric.
Clingmanite. See Margarite.
Clinkstone. See Orthoclase.
Clinochlore. See Ripidolite and Corundophilite.
Clinoclase. See Clinoclasite.
CLINOCLASITE. $H_3Cu_3AsO_7$. Monoclinic. Abichit, *Bernh.*; aphanèse, *Beud.*; aphanesite, *Shep.*; clinoclase, *Greg.* and *Lettsom*; cuivre arseniaté en prisme rhomboidal oblique, *Levy*; cuivre arseniaté férrifère, *H.*; cuivre arseniaté prismatique triangularé, *Dufren.*; cupreous arsenate of iron, *Bourn.*; diatomous habronem malachit, *Mohs*; klinoclas; klinoklas, *Breit.*; oblique prismatic arseniate of copper, *Phillips*; radiated acicular olivenite, *Jameson*; siderochalcit, *Glock.*; strahlenerz, *Karst.*; strahlenkupfer, *Hausm.*; strahlerz, *Wern.*; strahliges olivenerz, *Karst.*; trihedral arseniate of copper, *Bournon.*.

Clinocrocite, Sandb. Near Clinophaeite. Monoclinic. Klinocrocit; klinocrocite.

Clinoëdrit. See Tetrahedrite.

CLINOHUMITE, *Des Cloiz.* $Mg_9Si_3O_{14}$. Monoclinic. Chondrodite; klinohumit.

CLINOPHAEITE, *Sandb.* $(K,Na)_8R''(FeAl)_2(OH)_6(SO_4)_5+5\ H_2O$. Monoclinic. Klinophaeite.

Clintonite. See Seybertite.

Clintonit im Handel. Seybertite.

Cloanthite. See Smaltite.

Cloudy chalcedony. See Quartz.

Cloustonite, Heddle. Bituminous mineral soluble in benzole.

Cluthalite. See Analcite.

Cluthalith. See Analcite.

Coal, mineral. See Mineral coal.

Coal, boghead. See Torbanite and Mineral coal.

Coal, brown. See Mineral coal.

Coal, cannel. See Mineral coal.

Coal or asphalt. See Asphaltum.

Coal or asphalt. See Grahamite.

Coal-like substances containing more earth than fire. See Mineral coal.

Cobalt argentifère. See Wad (?).

Cobalt arsenate. See Erythrite.

Cobalt arséniaté. See Erythrite.

Cobalt, arsenical. See Smaltite.

Cobalt, black. See Wad.

Cobalt bloom. See Erythrite.

Cobalt carbonate. See Remingtonite.

Cobalt coating. See Erythrite.

Cobalt crust. See Erythrite.

Cobalt, earthy. See Wad.

Cobalt éclatant. See Cobaltite.

Cobalt glance. See Cobaltite.

Cobalt glanz. See Cobaltite.

Cobalt, gray. See Smaltite.

Cobalt gris. See Cobaltite.

Cobalt gris. See Smaltite.

Cobalt mica. See Erythrite.

Cobalt ochre. See Erythrite.

Cobalt oxidé noir. See Wad.

Cobalt pyriteux. See Linnaeite.

Cobalt pyrites. See Linnaeite.

Cobalt, red. See Erythrite.

Cobalt sulfuré. See Linnaeite.

Cobalt sulphate. See Bieberite.

Cobalt sulphuret. See Jaipurite and Linnaeite.

Cobalt terarsenide, Thomson.

Cobalt terreux noir. See Wad.

Cobalt terreux rayonée rouge. See Erythrite.

Cobalt vitriol. See Bieberite.

Cobalt, white. See Smaltite and Cobaltite.

Cobalt scorodite, Lippmann.

Cobaltic galena. See Clausthalite.

Cobaltic germinations. See Erythrite.

Cobaltic mispickel. See Arsenopyrite.

Cobaltide. See Wad.

Cobaltiferous pyrite. See Pyrite.

Cobalti minera colore rubro. See Erythrite.

Cobaltine. See Cobaltite.

COBALTITE. $Co_2As_2S_2$. Isometric. Bright white cobalt, *Kirwan*; cobalt éclatant, *Brochant*; — glanz, *Jameson*; — gris pt., *H.*; cobaltine, *Beud.*; cobaltum cum ferro sulfurato et arsenicato mineralisatum, *Cronst.*; glance cobalt, *Jameson*; glantz kobolt, *Cronst.*; glanz kobald, *Wern.*; — kobalt; — kobaltkies; — kobold, *Wern.*; hexahedral cobalt pyrites, *Mohs*: mine de cobalt arsenico-sulfureuse, *de Lisle*; — — — blanche, *de Lisle*; silver white cobalt; weisserspieskobalt, *Wern.*

FERROCOBALTITE: Ferrocobaltine, *Dana*; stahlkobalt.

Cobaltkies. See Linnaeite.

COBALTOMENITE. Co Se. Monoclinic.

Cobaltum acido arsenico mineralisatum. See Erythrite.

Cobaltum arsenio mineralisatum. See Smaltite.

Cobaltum cum ferro sulfurato et arsenicato mineralisatum. See Cobaltite.

Cobaltum nigrum. See Wad.

Cobaltum pyriticosum. See Linnaeite.

Cobre abigarrado. See Bornite.

Cobre blanco. See Domeykite.

Cobre negro estrellado de tantal. See Tourmaline.

Cobre panaceo. See Bornite.

COCCINITE, *Haid.* Iodide of mercury (?). Iodic mercury, *Phillips*; iodic quicksilver; iodquecksilber, *Germ.*; iodure de mercure, *Del Rio*; jodmerkur; jodquecksilber; mercure iodure, *Dufren*; mercury iodide; quicksilver iodide.

Coccolite. See Pyroxene.

Coccolithe. See Pyro

…e de Finlande. See Amphi-

…d red copper. See Cuprite.
See Tourmaline.
…mb barytes. See Barite.
…mb pyrites. See Marcasite.
…lactite. See Wavellite.
…LAEOLACTITE, *Petersen.* Al_6 …+10 H_2O. Crystalline.
…el ore. See Bournonite.
…ee Mineral coal.
…ANITE. $Ca_2B_6O_{11}$. 5 H_2O. Mo…ic.
See Celestite.
…RITE. Al_4SiO_8+9 H_2O. Amor…. Das man dort salpeter nannte, *…leben*; kollyrit, *Karst.*; natur…alaunerde, v. *Fichtel*; silicifer…rdrate of alumina, *Phillips.*
…n. See Kaolinite.
…rth.
…ite. See Garnet.
…ADOITE, *Genth.* HgTe. Mas…
…e. See Talc.
…isen. See Columbite.
…BITE, *Jameson.* (FeMn), $(Cb_2$ …$)_5$. Orthorhombic. Baierine, …; columbate of iron; columbei…*Germ.*; columbite stannifère, …; dianite, *von Kob.*; ferro…ite, *Herm.*; ferruginous oxide …umbium; groenlandite, *Breit.*; …nnolite; kolumbite; niobite, …and *Ramm.*; ore of columbium, …*etti*; tantale oxydé, *H.*; tantale …ierre; torrelite, *Thom.*
…e stannifère. See Columbite.
…r dolomite. See Dolomite.
…r heavy spar. See Barite.
…r red clay iron ore. See Lim…
…. See Genthite.
…felspar. See Orthoclase.
…garnet. See Garnet.
…jade. See Amphibole.
…mica. See Muscovite.
…opal. See Opal.
…salt. See Halite.
…serpentine. See Serpentine.
…spar. See Calcite.
…bitumen. See Asphaltum.
…black manganese ore. See …elane.
…mineral pitch. See Asphaltum.

Compact orthoclase. See Orthoclase.
Compostella hyacinthe. See Quartz.
Comptonic kouphone spar. See Thomsonite.
Comptonite. See Thomsonite.
CONARITE. $Ni_4Si_3O_8$+3 H_2O. Monoclinic (?). Komarit; konarit, *Breit.*
Condrodite. See Chondrodite Humite and Clinohumite.
Condurrite. See Domeykite.
Cone-in-cone coal. See Mineral coal.
Confetti di Tivoli. See Calcite.
Confolensite. See Montmorillonite.
CONICHALCITE. $(CuCa)_3As_2O_8$+H_8 CuO_2+$\frac{1}{2}H_2O$. Massive. Konichalcit, *Breit.*
Conistonite, Headle. CaC_2O_4+7 H_4O. Mixture. Orthorhombic.
Conite. See Dolomite.
CONNELLITE, *Dana.* Contains CuO, SO_3,Cl. Hexagonal. Azure-blue copper ore composed of needle crystals, *Rashl.*; sulphato chloride of copper, *Connel.*
COOKEITE, *Brush.* Approx. 2 RO, 7 R_2 O_3, 9 SiO_2+12 H_2O. Crystalline.
Copal, fossil. See Copalite.
Copaline. See Copalite.
COPALITE. $C_{40}H_{64}O$. Copaline, *Hausm.*; erdharz; fossil copal, *Johnston*; Highgate resin, *Aikin*; mineral resin; retinite pt., *Glock.*; settlingite; settling stones.
Copiapite. See Fibroferrite.
COPIAPITE, *Rose.* $Fe_4(HO)_2(SO_4)_5$+11 H_2O. Hexagonal. Basisches schwefelsaures eisenoxyd, *Rose*; couperose jaune; eisenoxyd blätteriges, basisch schwefelsaures; eisenoxyd schwefelsaures; fibrous stypticite; foliated copiapite; gelb atrament, *Agric.*; gelbeisenerz, *Breit.*; gul atrament sten, *Wall*; lapis atramentarius flavus, *Wall*; misy, *Pliny*; misylite; potash copperas; xanthosiderite pt., *Glock.*
COPPER. Cu. Isometric. Aes cyprium, *Plin.*; barilla; barilla de cobre; cement copper, *Kirwan*; cuivre, *Fr.*; cuivre natif, *Fr.*; gediegen kupfer, *Germ.*; kupfer, *Germ.*; native copper; octahedral copper, *Mohs*; venus, *Alchem.*
Copper and lead selenid. See Zorgite.

Copper, antimonial. See Chalcostibite.
Copper arsenate. See Liroconite and Olivenite.
Copper, arsenical. See Domeykite and Algodonite.
Copper, black. See Melaconite.
Copper blende. See Tennantite.
Copper, blue. See Azurite and Covellite.
Copper carbonate. See Azurite and Malachite.
Copper chlorid. See Atacamite and Tallingite.
Copper chromate. See Vauquelinite.
Copper diaspore. See Pseudomalachite.
Copper, emerald. See Dioptase.
Copper froth. See Tyrolite.
Copper glance. See Chalcocite.
Copper, gray. See Tetrahedrite.
Copper, green. See Chrysocolla.
Copper, indigo. See Covellite.
Copper mica. See Chalcophyllite.
Copper muriate. See Atacamite.
Copper nickel. See Niccolite.
Copper, octahedral. See Cuprite.
Copper oxychlorid. See Atacamite and Tallingite.
Copper oxyd. See Cuprite and Melaconite.
Copper phosphate. See Pseudomalachite and Libethenite.
Copper pitchblende. See Chrysocolla.
Copper, purple. See Bornite.
Copper pyrites. See Chalcopyrite.
Copper, pyritous. See Chalcopyrite.
Copper, red. See Cuprite.
Copper selenid. See Berzelianite.
Copper silicate. See Dioptase and Chrysocolla.
Copper sulphate. See Chalcanthite.
Copper sulphato chlorid. See Connellite.
Copper sulphuret. See Bornite, Chalcocite, Chalcopyrite, and Covellite.
Copper tungstate. See Cuproscheelite.
Copper uranite. See Torbernite.
Copper vanadate. See Volborthite.
Copper vanadio phosphate.
Copper, variegated. See Bornite.
Copper, velvet. See Cyanotrichite.
Copper, vitreous. See Chalcocite.
Copper, vitriol. See Chalcanthite.
Copper, yellow. See Chalcopyrite.
Copper zinc spar. See Smithsonite.
Copperas group. Χάλκανθον, **Χαλκῖτις**, Μελαντηρία, **Σῶρυ**, **Μίσυ**, **Dios**

Copperas group—Continued.
Atramensteiu; **atramentum**, *Gesner*; —**album durum goslarianum**, *Gesner*; — **cœruleum cyprium pulcherimum**, *Gesner*; **atramentum sutorium**, *Pliny*; — — **candidum**, *Agric.*; — — **cœruleum**, *Agric.*; — — **viride**, *Agric.*; — **viride**, *Alb. Magn.*; **chalcites**; chalcitis; **kupferwasser**; **lapis atramenti**; **melanteria**; **misy**, *Pliny*; **soru**; **sory**, *Pliny*; **terra vitriolica**; **vitriolum**, *Agric.*; — **album**, *Cronst.*; — **cupri**; — **cypri**; — **ferri**; — **martis**; — **veneris**; — **viridi**.
Copperas. See Melanterite.
Copperas, potash. See Jarosite.
Copperas, soda. See Jarosite.
Copperas, white. See Coquimbite.
Copperas, yellow. See Copiapite.
Copperasine. See Jarosite.
Coprolites. See Apatite.
Coprolithes. See Apatite.
COQUIMBITE, *Breit.* $Fe_2S_3O_{15}+9H_2O$. Hexagonal. Neutrales schwefelsaures eisenoxyd, *Rose*; white copperas.
Coracite. See Uraninite.
Corail. See Calcite.
Coraline agate. See Quartz.
Coralliners. See Cinnabar.
Coralloid aragonite. See Aragonite.
Coral ore. See Cinnabar.
Coral. See Calcite.
Cordierite. See Iolite.
Corindon. See Corundum.
Corindon adamantin. See Corundum.
Corindon granulaire. See Corundum.
Corindon harmophane. See Corundum.
Corindon hyalin. See Corundum.
Corivendum. See Corundum.
Corivindum. See Corundum.
Corkite. See Beudantite.
Cornaline. See Quartz.
Cornalines de vieille roche. See Quartz.
Cornéenne lydienne. See Quartz.
Corneine. See Amphibole.
Corneous crystallisatus pt. See Tourmaline.
Corneous lead. See Phosgenite.
Corneous manganerz. See Rhodonite.
Corneous manganese. See Rhodonite.
Corneous mercury. See Calomel.
Corneous silver. See Cerargyrite.
Corneus. See Pyroxene.
Cornuma [illegible]

Corneus solidus. See Amphibole
Cornish diamond. See Quartz.
Cornish tin ore. See Cassiterite.
Cornite. See Orthoclase.
Corn spar. See Calcite.
Cornubianite. See Albite and Ortnoclase.
CORNWALLITE, *Zippe.* $Cu_5(AsO_4)_2(OH)_4+H_2O$. Amorphous.
Corongit. See Coronguite.
CORONGUITE, *Raimondi.* $PbO, Ag_2O\ Sb_2O_5$. Amorphous. Corongit.
Coronite. See Tourmaline.
Corrolite. See Linnaeite.
Corsilyte. See Amphibole.
Corundellite. See Margarite.
Corundite. See Corundum.
CORUNDOPHILITE, *Shepard.* $R_6Al_4Si_3O_{18}+5\ H_2O$. Monoclinic. Amesite; clinochlore, *Cooke*; korundophilit.
CORUNDUM. Al_2O_3. Hexagonal. Adamant, *Kirwan*; adamantine spar, *Phillips*; adamas siderites, *Plin.*; alumina; authrax corindon, *H.*; — adamantine, *Brong.*; corivendum; corivindum, *Woodw.*; corundite; demantspath, *Klapr.*; diamantspath; diamond spar; gyrasole, *Kirwan*; imperfect corundum, *Grev.* and *Bourn.*; karund, *Hind*; korund, *Wern.*; rhombohedral corundum, *James.*; rhombohedrischer corund, *Mohs*; soimonite; spath adamantine, *Delam.*; thonerde.
EMERY: Ἀκόνη ἐξ Ἀρμενίας, *Theophr.*; Σμῦρις, *Dioscor.*; Armenian whetstone; corindon granuleux, *H.*; emeri; emeril, *H.*; emerite, *Shep.*; granular corundum; grinding spar; naxium; — ex Armenia; pyrites vivus, *Plin.*; schmergel; schmirgel, *Wern.*; smergel; smirgel; smiris, *Agric.*; smiris ferrea, *Wall*; smyris.
SAPPHIRE: Τάνθος, *Gr.*; Ἄνθραξ, *Theoph.*; amethyste orientale; apyrote; asteria, *Plin.*; asteriated sapphire; asterie; bleu du roi; blue sapphire; carbunculus; cat sapphire; corindon harmophane; — hyalin, *H.*; — perfect; émeraude orientale; hyacinth; hyacinthos; lichnis, *Plin.*; luchs saphir; luchs sapphire; lynx sapphire; opalescent sapphire; oriental amethyst; — aquamarine; —
CORUNDUM—Continued.
chrysolite; — emerald; — hyacinthe; — peridot; — ruby; — sapphire; — topaz; orientalisk rubin, *Wall*; rubie étoile; rubin; rubis; — oriental; salamstein, *Wern.*; salamstone; saphir, *Wern.*; — asterié; — blanc; — de chat; — étoile; — indigo; — oriental; — plombé; sapphir, — chatoyant; — green; — limpid; — perfect; — red; — violet; — yellow; sapphirus; star ruby; — sapphire; — stone; sternsaphir; sternstein; télésie, *H.*; water sapphire.
Corundum, imperfect. See Corundum.
Corundum, perfect. See Corundum.
CORYNITE. Ni(AsSb)S. Isometric. Korynit, *v. Zeph.*
COSALITE, *Genth.* $Pb_2Bi_2S_5$. Orthorhombic. Bleibismutit; bjelkite.
Cösit. See Pinite.
Cossaite (?). See Paragonite.
Cossyrite. Near Amphibole. Triclinic.
Cotham marble. See Calcite.
Cotonnia. See Cotunnite.
Cottaite. See Orthoclase.
Cotterite. See Quartz.
Cottonnerz. See Sylvanite.
Cotton stone. See Mesolite.
Cotunna. See Cotunnite.
COTUNNITE, *v. Kob.* $PbCl_2$. Orthorhombic. Chlorblei; chloride of lead, *Thomson*; cotunna; plomb chloruré, *Dufren.*
Coulobrasine. See Zinc selenide.
Coupolite. See Prehnite.
Couseranite. See Dipyre.
Couzeranite. See Dipyre.
Covelline. See Covellite.
COVELLITE, *Freiesleben.* CuS. Hexagonal. Bisulphuret of copper, *Covelli*; blue copper; breithauptite, *Chapm.*; carminite, *Sandb.*; cantonite, *Pratt*; copper sulphuret; covelline, *Beud.*; cuivre sulfuré bleu; digenite, *Breit.*; indigo copper; kupferindig, *Breit.*; sulfure de cuivre de Vesuve, *Beud.*
Couperose blanche. See Goslarite.
Couperose bleue. See Chalcanthite.
Couperose jaune. See Copiapite.
Couperose verte. See Melanterite.
Craie. See Calcite.
Craie de Briançon. See Talc.
Craie rouge. See Hematite.

Craigtonite, Heddle. A manganese [illegible] on granite.

Craitonite. See Menaccanite.

Crateritis. See Zircon.

Crayon rouge. See Hematite.

CREDNERITE, *Ramm.* $Cu_2Mn_4O_8$. Monoclinic. Kupferhaltiges manganerz, *Credner*; mangankupfererz. *Credner*; mangankupferoxyd, *Haasm.*: peloconite.

Creta. See Calcite.

Creta Breanzonia. See Talc.

Creta Hispanica. See Talc.

Creta sartoria. See Talc.

Crichtonite. See Menaccanite.

Crichtonite lamelleuse. See Menaccanite and Hematite.

Cryptomorphite. See Cryptomorphite.

Crispite. See Rutile.

Cristal de roche. See Quartz.

Cristianite. See Anorthite.

Crocalite. See Natrolite.

CROCIDOLITE (uncertain). $R_8Si_8O_{16}+2\,H_2O$. Fibrous. Blau-eisenstein, *Klapr.*; blue asbestus; blue ironstone; cat's eye; crokolite; fasriges eisenblau, *Haus.*; fasriger siderit, *Leonh.*; krokidolite; krokydolite, *Hausm.*; krokydolith, *Hausm.*; tiger's eye.

Crockolite. See Crocidolite.

Crocoise. See Crocoite.

Crocoisite. See Crocoite.

CROCOITE. $PbCrO_4$. Monoclinic. Blei chromat; bleierz, roth; chromate of lead, *Phillips*; chromsaures blei, *v. Leonhard*; crocoise, *Bead.*; crocoisit, *v. Kob.*; hemi prismatic lead baryte; kallochrom, *Hausm.*; krokoit, *Breit.*; minera plumbi rubra, *Wall*; nova minera plumbi, *Lehman*; plomb chromaté, *H.*; plomb chromaté rouge, *H.*; plomb rouge, *Macq.*; red lead ore, *Jameson*; red lead spar, *Kirwan*; rothbleierz, *Wern.*; rothesbleyerz, *Wern.*

Croissette. See Staurolite.

Cromfordite. See Phosgenite.

Cromfordtite. See Phosgenite.

CRONSTEDTITE, *Steinmar.* $H_4(Fe$ [illegible] Si_2O_{13}. Chloromelan, *Breit.*; edral melan mica.

TE, *Nord.* $(CuTlAg)_2Se$.

Crop tin. See Cassiterite.

Cross course spar. See Quartz.

Cross-stone. See Andalusite.

Crow coal. See Mineral coal.

Crucilith. See Staurolite.

Crucite. See Andalusite.

Crucite, Thoms. Fe_2O_3?

Crumbling feldspar. See Albite.

Cryoconite. Trachytic dust? Kryokonit, *Nord.*

Cryolite. See Chodneffite.

CRYOLITE, *Phillips.* $Al_2Na_6F_{12}$. Triclinic. Aluminæ fluatée alcaline, *H.*; chryolith; cryone haloide; eisstein, *Germ.*; fluate of soda and alumina; kryolite, *Wern.*; kryolith, *Kast*; prismatic cryone haloid, *Mohs*; thonerde mit flussäure, *Abild.*

Cryolithe. See Cryolite.

CRYOPHYLLITE, *J. P. Cooke.* $Fe\,H_6$ $K_3Li_4Al_4F_4(SiO_3)_{10}$. Orthorhombic. Kryophyllite.

Cryptohalite, Scacchi. NH_4SiF_3.

Cryptoline. See Cryptolinite.

Cryptolinite. The denser fluid found in crystal cavities; a new fluid in the cavities of minerals, *Brewster*; cryptoline, *Dana.*

CRYPTOLITE. $Ce_3P_2O_8$. Tetragonal. Cryptolithe; kryptolith, *Wöhler*; phosphate of cerium; phosphocerite, *Watts.*

Cryptolithe. See Cryptolite.

CRYPTOMORPHITE, *Hour.* Na_2Ca_3 $B_6O_{12}+12\,H_2O$. Crystalline. Criptomorphite; kryptomorphite.

Crysophane. See Seybertite.

Crystallites, Vogelsang. Forms between amorphous matter and crystals: Belonosphärites; cumulites; felsosphärites; globosphärites; globulites; granosphärites; longulites; margarites; sphärolites.

Crystallus. See Quartz.

Cuban. See Cubanite.

CUBANITE, *Chapman.* $CuFe_2S_3$ or Cu Fe_4S_5. Isometric. Cuban, *Breith.*

Cube ore. See Pharmacosiderite.

Cube spar. See Anhydrite.

Cubicite. See Analcite.

Cubic nitre. See Soda nitre.

Cubic pyrites. See Pyrite.

Cubizit. See Analcite.

Cuboïcite. See Chabazite.

s. See Analcite.
montagne. See Amphibole.
See Copper.
antimonial. See Chalcostibite.
arseniaté. See Olivenite and
lcophyllite.
arseniaté en octaedres obtus.
Liroconite.
arseniaté en octaedres aigus.
Olivenite.
arseniaté en prisme rhomboïdal
ique. See Clinoclasite.
arseniaté férrifère. See Clino-
ite and Scorodite.
arseniaté hexagonal lamelli-
ne. See Chalcophyllite.
arseniaté lamelliforme. See
lcophyllite.
arseniaté octaedral. See Liro-
ite.
arseniaté prismatique triangu-
e. See Clinoclasite.
arseniaté prismatique. See
renite.
arseniaté rhomboedrique. See
nite.
arsenical. See Domeykite.
azuré. See Azurite.
bleu. See Azurite.
carbonaté. See Malachite and
rite.
carbonaté bleu. See Azurite.
carbonaté vert. See Malachite.
carbonaté vert pulverulent.
Chrysocolla.
gris. See Tetrahedrite.
hydrate silicifère. See Chryso-
a.
hydrophosphaté. See Pseudo-
achite.
hydrosiliceux. See Chrysocolla.
jaune. See Chalcopyrite.
micacé. See Chalcophyllite.
muriaté. See Atacamite.
noir. See Chalcocite.
oxidé noir. See Melaconite and
orite.
oxidé rouge. See Cuprite.
oxidulé capillaire. See Cuprite.
panaché. See Bornite.
phosphaté. See Libethenite and
udomalachite.
pyriteux. See Chalcopyrite.
pyriteux hépatique. See Bor-
.
Cuivre rouge. See Cuprite.
Cuivre sélénié. See Eucairite and Berzelianite.
Cuivre sélénié argental. See Eucairite.
Cuivre spiciforme. See Chalcocite.
Cuivre sulfaté. See Chalcanthite.
Cuivre sulfuré. See Chalcocite.
Cuivre sulfuré hépatique. See Chalcocite and Chalcopyrite.
Cuivre sulfuré violet. See Bornite.
Cuivre sulfuré argentifère. See Stromeyerite.
Cuivre sulfuré bleu. See Covellite.
Cuivre vanadaté. See Volborthite.
Cuivre velouté. See Cyanotrichite.
Cuivre vitreux. See Chalcocite.
Cuivre vitreux violet. See Bornite.
Culebrite. See Zinc selenide.
Culsageeite. See Jefferisite.
Cumengite. See Volgerite.
Cummingtonite. See Amphibole and Rhodonite.
Cumulites. See Crystallites.
Cupid's pencils. See Quartz (Amethyst containing Limonite fibers).
Cupreine. See Chalcocite.
Cupreous anglesite. See Linarite.
Cupreous arsenate of iron. See Clinoclasite.
Cupreous arseniate of iron. See Scorodite.
Cupreous bismuth. See Wittichenite and Emplectite.
Cupreous calamine. See Tyrolite.
Cupreous manganese. See Wad.
Cupreous seleniuret of silver. See Eucairite.
Cupreous sulphate of lead. See Linarite.
Cupreous sulphato-carbonate of lead. See Caledonite.
Cupreous sulphuret of bismuth. See Wittichenite and Emplectite.
Cupreous phosphate of alumina, Domeyko.
Cupriferous blende. See Sphalerite.
Cupriferous pyrite. See Pyrite.
Cupriferious sandstone of Alderley. See Malachite.
Cupriferous sulphuret of bismuth. See Wittichenite.
CUPRITE, *Haid.* Cu_2O. Isometric. Aes caldarium rubro fuscum; copper octahedral; — oxyd; cuivre oxidé rouge, *H.*; — oxidulé, *H.*; — rouge; cuprum cryst. octaëdrum, *Linn.*; —

TE, *Shep.* $CaB_2Si_2O_8$. Or-
nbic.
ite. See Amphibole.
See Tourmaline.
See Elaterite.
ilver ore. See Pyrargyrite.
weiss Kreutz. See Anda-
See Whitneyite.
dort Salpeter nannte. See
e.
See Datolite.
E, *Aiken.* $HCaBSiO_5$. Mono-
Borate of lime, *Hayes*; boro-
of lime, *Thomson*; chaux
siliceuse, *Haüy*; chaux da-
Brochant; datholit, *Wern.*;
te, *Brong.*; datolith, *Esmark*;
e spar; dystom spath, *Mohs*;
ite, *Hausm.*; humboldtite,
rismatic disthene spar, *Mohs*;
s borate of lime.
LITE, *Hausm.*: Botriolit,
; botryolith, *Karst.*; chaux
siliceuse var. concretionée
lonnée, *H.*
See Datolite.
See Zippeite.
SLITE. FeS. Cr_2S_3. Crystal-
$4\ Bi_2O_3$, Bi_2Cl_6. Amorphous.
See Octahedrite.
See Tourmaline.
e. See Beryl.
ee Nephelite.
e Alunogen.
XITE. $H_4(Mn, Mg)Al_6Si_6O_{24}$.
ombic.
See Nephelite.
ITE, *Harrington.* $NaAl(OH)$
lonoclinic.
e. See Calcite.
ene.
TE, *Berg.* PbV_2O_6. Massive.
n, s. *Kob.*; eusynchit, *Fischer*
; rhombischer vanadit, *Zippe.*
See Hisingerite.
See Montmorillonite.
Friedel. Fe_2O_3, Cu_2O(?). Crys-
See Montmorillonite.
See Leucopyrite.
See Orthoclase.
See Argentite (?).

Delessite, Naum. $H_{10}(Mg, Fe'')_4(AlFe''')_4Si_4O_{23}$. Massive. Chlorite ferrugineuse, *Delesse*; chlorophaenesite; eisenchlorite; ferruginous chlorite; subdelessite.
Delislite. See Freieslebenite.
Delphinite. See Epidote.
Delvauxene. See Borickite and Dufrenite.
Delvauxite. See Dufrenite.
Demant. See Diamond.
Demantspath. See Corundum.
Demidoffite. See Chrysocolla.
Demidovite. See Chrysocolla.
Demidowit. See Chrysocolla.
Demiopale. See Opal.
Dendrachates. See Quartz.
Dendrite agate. See Quartz.
Derb brunsten. See Psilomelane.
Derbyshire spar. See Fluorite.
Dermatin, Breit. $(MgFe)_3Si_2O_7+6\ H_2O$ (?).
Dernbachite. See Beudantite.
De sale native cathartico in fodinus Hungariae recens invento. See Epsomite.
DESCLOIZITE, *Damour.* $(Pb, Zn)_2(OH)VO_4$. Monoclinic. Brackebuschite; cuprodescloizite; rhombischer vanadite, *Zippe.*
Desmin. See Hypostilbite and Stilbite.
Dissert. de Ferro ochr. See Hypochlorite.
Destinezite. Near Delvauxite.
Deuto fluate of cerium. See Fluocerite.
Devilline. See Langite.
Devonite. See Wavellite.
Dew. See Water.
Dewalquite. See Ardennite.
DEWEYLITE, *Emmons.* $Mg_4Si_3O_{10}+6\ H_2O$. Amorphous. Gymnite, *Thom.*
Diabantachronnyn, Lieb. $R''_7R'''_2Si_4O_{21}+5\ H_2O$ (?).
Diabantite. $R''_{12}R'''_4Si_9O_{36}+9\ H_2O$.
Diabase. See Labradorite.
Diabase porphry. See Labradorite.
DIACLASITE. $(MgFeCa)SiO_3$. Orthorhombic; diaklase, *Breit.*; diaklasit, *Hausm.*; diallage talkerdige; gelber schillerspath, *Freies.*; talkartiger hornblende.
Diadephite. Manganese arsenate.
DIADOCHITE, *Breit.* $Fe'''_8(OH)_6(SO_4)_3(PO_4)_4+24\ H_2O$. Phosphoreisensinter, *Ramm.*
Diagonite. See Brewsterite.

Diaklase. See Diaclasite.
Diaklasit. See Diaclasite.
Diallage. See Bastite.
Diallage. See Pyroxene.
Diallage chatoyante. See Bastite.
Diallage fibro-laminaire métalloïde. See Pyroxene, Seybertite, and Enstatite.
Diallage, green. See Pyroxene and Amphibole.
Diallage, hydrous. See Pyroxene.
Diallage, metalloidal. See Enstatite and Hypersthene.
Diallage métalloïde. See Enstatite and Hypersthene.
Diallage, talkartiger. See Diaclasite.
Diallage verte. See Amphibole and Pyroxene.
Diallagon. See Amphibole.
Diallogite. See Rhodochrosite.
Dialogite. See Rhodochrosite.
Diamagnetit. See Dimagnetite.
Diamant. See Diamond.
Diamant brut. See Zircon.
Diamant compacte. See Diamond.
Diamant d'Alençon. See Quartz.
Diamanthoid. See Garnet.
Diamantspath. See Corundum.
DIAMOND. C. Isometric. Adamas pt., *Pliny*; adamas, punctum lapidis, pretiosior auro, *Manilius*; carbone; demant, *Germ.*; diamant, *Fr.*; diamond splint; octahedral diamond, *Mohs*; siderite.
CARBONADO: Carbonat; carbonite; diamant compacte; diamond carbonate.
CARBON DIAMENTAIRE, *Count de Douhet*: Diamond black.
Diamond black. See Diamond.
Diamond carbonate. See Diamond.
Diamond spar. See Corundum.
Diamond splint. See Diamond.
Dianite. See Columbite.
Diaphorite. See Rhodonite.
DIAPHORITE. 5 (Pb,Ag_2)S. 2 Sb_2S_3. Orthorhombic.
DIASPORE, *Haüy.* $HAlO_2$. Orthorhombic. Blättricher hydrargillit, *Hausm.*; dihydrate of alumina, *Thomson*; euclastic disthene spar, *Haid.*; hydrate of alumina.
Diastatite. See Amphibole.
Diastatite, Breithaupt. Near Amphibole. Triclinic (?). Hemiprismatites, *Breit.*; wallerian, *Breit.*
Diatomous euklas haloide. See Erythrite.
Diatomous gypsum haloide. See Haidingerite.
Diatomous habronem malachite. See Clenoclasite.
Diatomous kouphone spar. See Laumontite.
Diatomous schiller spar. See Enstatite and Hypersthene.
Dichlorid of mercury. See Calomel.
Dichroite. See Iolite.
Dichter blauer feldspath. See Lazulite.
Dichter rothstein. See Rhodochrosite.
Dichtes roth braunsteinerz. See Rhodonite.
Dickflüssiges harz. See Baikerinite.
DICKINSONITE. 4 (Mn, Fe, Ca, Na_2)$_3$ P_2O_5+3 H_2O. Monoclinic.
Didimite. See Muscovite.
Didrimite. See Muscovite.
Didrymite. See Muscovite.
Didymite. See Muscovite.
Dietrichite. (Zn, Fe, Mn)$Al_2(SO_4)_4$+22 H_2O. Monoclinic (?).
Digenite. See Chalcocite and Covellite.
Dihydrate of alumina. See Diaspore.
Dihydrite. See Pseudomalachite.
Dillenburgite. See Chrysocolla.
Dillnite, Haid. $Al_2Si_3O_{12}$+9 H_2O.
Dimagnetite, Shep. Magnetite pseud. (?). Orthorhombic. Diamagnetit.
Dimanthoid. See Garnet.
Dimorfina. See Dimorphite.
Dimorfine. See Dimorphite.
Dimorphine. See Dimorphite.
DIMORPHITE. As_2S_3. Orthorhombic. Dimorfina, *Scacchi*; dimorfine; dimorphine.
DINITE, *Meneghini.* Hydrocarbon, near Hartite.
Diopside. See Pyroxene.
Diopside bacillaire. See Pyroxene.
Diopside compacte. See Spinel.
Diopside granuliforme. See Pyroxene.
DIOPTASE, *Haüy.* H_2CuSiO_4. Hexagonal. Achirit, *Herm.*; coppersilicate: emerald copper, *Jameson*; emeraudine, *Dela.*; kupferschmaragd, *Wern.*; rhombohedral emerald malachite, *Mohs*; smaragdochalcit, *Mohs*; smaragdochalzite.
Dioryte. See Amphibole and Albite.
Dioxylite. See Lanarkite.
Dioxylith.

ee Margarite.
couphone spar. See Epis-

Anorthite.
aryt. See Strontianite.
opper glance. See Bour-

uklas haloid. See Haid-

ron ore. See Ilvaite.
hal baryt. See Witherite.
ead baryt. See Cerussite.
live malachite. See Libe-

$(Na_2, Ca)_2Al_4Si_9O_{26}$ (?).
l. Conseranite; couzera-
rpentier; leucolite, *Dana*;
de Mauléon; prehnitoid,
chorl blanchâtre de Mau-
melzstein, *Wern.*
Zimmapan. Quadrisilicate

exique. See Wernerite.
e Pyrite.
lral eutome glance. See
ite.
ee Dyscrasite.
See Dyscrasite.
ee Dyscrasite.
See Gersdorffite.
ee Seybertite.
See Seybertite.
ee Cyanite.
e Nephelite and Sodalite.
. See Gersdorffite.
al azure spar. See Lapis

al corundum. See Spinel.
al dystome glance. See
te.
al garnet. See Garnet.
al garnet blende. See
e.
al iron ore. See Franklin-

al kouphone spar. See

al mercury. See Amalgam.
par. See Calcite.
HANITE, *Scacchi.* Cu_2SO_5.
ic.
See Labradorite and Pyrox-

Cloiz. Zeolite from Ayr-
otland.

Dolomie. See Dolomite.
Dolomite. See Ankerite.
DOLOMITE, *Kirw.* $(CaMg)CO_3$. Hexagonal. Asche; bittersalzerde, *Klapr.*; bitterkalk, *Hausm.*; bitter spar; bitter spath; brachytypous lime haloid; braunspath; brosite; brossit, *Hirzel*; brown dolomite; — spar pt.; cargnieule; chaux carbonatée aluminifère, *H.*; — — brunissant; — — ferrifère perlée; — — lente; — — magnesifère pt.; columnar dolomite; conite; dolomie, *Saus.*; dolomite spar, *James.*; flexible dolomite; flintkalk, *Retz.*; kalktalkspath; kohlensauerterkalkerde; konit; macrotypous lime haloid, *Mohs*; magnesian carbonate of lime; — limestone; manganiferous dolomite; marbre élastique; miascite; miasite; miaskite; miemit, *Klapr.*; pencalite; pearl spar pt.; perlspath; picrite; pierre du Levant; pierres calcaires très peu effervescentes avec les acides, *Dolom.*; rauchkalk; rauhkalk; rautenspath pt., *Wern.*; rhomboidalspath; rhombohedral lime haloid; rhombspar pt., *James.*; rohwand; spar brunissante; spath magnésien, *Dela.*; — perlé, *Rome de Lisle*; tharandite, *Kuhn.*
GURHOFITE: Gurhofian, *Karst.*
Dolomite sinter. See Hydrodolomite.
Dolomite spar. See Dolomite.
Dolomitic calcite. See Calcite.
Dolomitic ophiolite. See Serpentine.
DOMEYKITE. Cu_3As. Amorphous. Arsenical copper; arsenical copper pyrites, *Lery*; arsenikkupfer, *Zink.*; arseniure de cuivre, *Domeyko*; arsenkupfer; cobre blanco; condurrite, *Phillips*; cuivre arsenical, *Fr.*; weisskupfer, *Hausm.*; weisskupfererz, *Haus.*; white copper, *Kirwan*; white copper ore, *Kirwan*.
Donacargyrite. See Freieslebenite.
Doppelspath. See Calcite.
Dopplerite of J. C. Deicke. Near Hircite.
DOPPLERITE, *Haid.* $C_{10}H_{12}O_5$. Amorphous.
Doranite. See Chabazite.
Double fluate of cerium and yttria. See Yttrocerite.
Double gold. See Gold.

Doubly refracting spar. See Calcite.
Douglasite, Pfeiffer. $K_2FeCl_3+2\ H_2O$.
Dragées de Tivoli. See Calcite.
Dreelite. See Dreelite.
DREELITE, *Dufr.* $CaSO_4$, 3 $BaSO_4$. Hexagonal. Dreeit, *Glock.*
Dropstones. See Calcite.
Dry bone. See Smithsonite.
Ducktownite. See Barnhardtite.
Dudleyite, Genth. $R''_3R'''_4Si_7O_{23}+5\ H_2O$.
DUFRENITE, *Brong.* $Fe'''_2(OH)_3PO_4$. Orthorhombic. Chalkosiderit, *Ull.*; delvauxene, *Dumont*; delvauxite, *Haid.*; fasriche grün eisenerde, *W.*; fer oxidé terreux; fer phosphaté de Schneeberg; fer phosphaté vert; green iron ore, *Breith.*; grün eisenerde; grün eisenstein; iron phosphate; kraurite, *Brochant*; phosphate brun terreux; phosphate of iron, *Phillips*; strahlstein, *Jord.*
Dufrenoysite. See Sartorite and Binnite.
DUFRENOYSITE, *Damour.* $Pb_2As_2S_5$. Orthorhombic. Arsenomelane, *Waltersh.*; bleiarsenglanz; bleiarsenit, *Descl.*; gothardite; gotthardit, *Ramm.*; gotthardite gotthardtite, *Ramm.*; scleroclasite pt., *Waltersh.*; skleroclasite; skleroklasite.
Dumasite, Delesse. Near Ripidolite.
DUMORTIERITE. $Al_8Si_3O_{18}$. Orthorhombic.
DUMREICHERITE, *Dölter.* $Mg_4Al_2(SO_4)_7+36\ H_2O$.
Dungiven crystals. See Quartz.
Dungwen crystals. See Quartz.
Dunit. See Chrysolite.
Dunkles rothgiltigerz. See Pyrargyrite.
Dunkles weissgiltigerz. See Freieslebenite.
Dünnschuppiger eisenglimmer. See Göthite.
Dunyte. See Chrysolite.
Duportit. See Duporthite.
Duporthite. Silicate. Near Neolite. Duportit.
Durangite, Brush.
DURANGITE, *Breit.* $R_2As_2O_8+2\ RF$. Monoclinic.
Durchsichtig rodtguldenerz. See Proustite.
Dürfeldtite. $3\ RS+Sb_2S_3$. R = PbAgCu. Crystalline.
Dusodile. See Dysodile.
Duxite. C H O.
Duttenstein. See Calcite.
Dyplitite. See Schreibersite.
Dyoxylite. See Lanarkite.
Dyripe, Thomson.
Dysanalyte. $Na_2(CaFe)_8CeCb_2Ti_{16}O_{36}$. Isometric.
Dysclasite. See Okenite.
DYSCRASITE. Ag_4Sb; also Ag_6Sb. Orthorhombic. Antimon, prismatisches; antimon arsen, *Naum.*; antimon silber, *Germ.*; antimonial silver, *James.*; antimoniated native silver, *Kir.*; antimony silver, *Nicol*; argent antimonial, *Fr.*; argent antimonial ferro-arsenifère, *Haüy*; argentum nativum antimonio adunatum, *Bergm.*; arsenical antimonial silver, *Phill.*; discrase, *Beud.*; discrasit, *Fröbel*; diskrasit; octahedral antimony; prismatic antimony, *Moks*; pyritolamprite, *Adam*; silber spiesglanz; silber spiessglanz, *Haum.*; spiesglas silber, *Wern.*; stibio hexargentite, *Petersen*; stibio triargentite, *Petersen.*
ARSENIC SILVER; Argent arsenical, *Broch.*; arsenical silver, *Allan*; arseniksilber; arsensilber; silberarsenik.
Dysintribite. See Pinite.
Dysklasit. See Okenite.
Dyskolite. See Zoisite.
Dysluite. See Gahnite.
Dyslytite, Shep. (FeNiMg)P. Meteoric.
DYSODILE, *Boccone.* An acid hydrocabon. Dusodile. Houille papyracée, *Fr.*; merda di diavolo, *Ital.*; stercus diabole; stinkkohle, *Germ.*; tourbe papyracée, *Fr.*
Dysnite. See Rhodonite.
Dysntribite. See Pinite.
Dystommalachite. See Brochantite.
Dysyntribite. See Pinite.
Dystome spar. See Datolite.
Dystom spath. See Datolite.
Eagle stone. See Limonite.
Earth apatite. See Osteolite.
Earth flax. See Amphibole.
Earth foam. See Calcite.
Earthy bitumen. See Pittolium group.
Earthy brown coal. See Mineral coal.
Earthy calamine. See Hydrozincite.

Earthy carbonate of magnesia. See Sepiolite.
Earthy carbonate of lead. See Cerussite.
Earthy cobalt. See Wad.
Earthy cobalt bloom. See Erythrite.
Earthy greenockite. See Greenockite.
Earthy lead spar. See Cerussite.
Earthy magnetic iron. See Magnetite.
Earthy manganese. See Wad.
Earthy mineral pitch. See Pittolium group.
Earthy ochre of manganese. See Wad.
Earthy sulphide of silver. See Stephanite (?).
Earthy talc. See Kaolinite.
Earthy tripolite. See Opal.
Eau. See Water.
Eckebergit. See Ekebergite.
Eckmannite. Fe, Mn, SiO_2, H_2O.
Ecologyte. See Garnet.
Ecologyte. See Pyroxene.
Ecume de mer. See Calcite.
Ecume de mer. See Sepiolite.
Ecume de terre. See Calcite.
Edelforse. See Edelforsite.
EDELFORSITE, *von Kobell.* $Ca_2Si_3O_8$. Massive. Ædelforsite, *Erdmann*; edelforse; kalk silicat from Ædelfors; kalktrisilicat, *Hisinger*; pierre calcaire d'Edelfors; trisilicate de chaux.
Edelite. See Prehnite.
Edelopal. See Opal.
Edenite. See Amphibole.
EDINGTONITE, *Haid.* $BaAl(AlO)(SiO_3)_3+3H_2O$. Tetragonal. Antiedrit, *Breit.*; hemi-pyramidal felspar, *Haid.*
GLOTTALITE: Glottalithe, *Thomson.*
Edler serpentine. See Serpentine.
Edwardsite. See Monazite.
Edwarsit. See Monazite.
Efflorescent zeolite. See Laumontite.
Egeran. See Vesuvianite.
EGGONITE. Silicate of cadmium. Triclinic.
Egyptian jasper. See Quartz.
Egyptian marble. See Calcite.
Egyptian pebble. See Quartz.
Ehlite. See Pseudomalachite.
Ehrenbergite. Near Cimolite. Nöggerath.
EICHWALDITE. $(Al_2O_3Fe_2O_3)BO_3$. Interior biaxial segments of jeremejeffite.
Einfach arsenik cobalt. See Arsenical cobalt.
Ein fossil welches aenlichkeit mit dem granat hat, aber nicht granat zu seyn scheint. See Helvite.
Eisen. See Iron.
Eisenanatas. See Hematite.
Eisenapatit. See Triplite.
Eisenalaun. See Halotrichite.
Eisenblau. See Vivianite and Lazulite.
Eisenblüthe. See Aragonite.
Eisenbrucite. See Brucite.
Eisenchlorid. See Molysite.
Eisenchlorid mit den chlorkalien. See Kremersite.
Eisenchlorit. See Delessite.
Eischlorür. See Molysite.
Eisenchrom. See Chromite.
Eisenerde, blaue. See Lazulite.
Eisenerde, grüne. See Hypochlorite.
Eisenerz, öolithisches. See Hematite.
Eisenerz, trappisches. See Menaccanite (?).
Eisenerz, hystatisches. See Menaccanite.
Eisenglanz. See Hematite.
Eisenglanz, octaedrischer. See Magnetite.
Eisenglas. See Fayalite.
Eisenglimmer. See Hematite and Vivianite.
Eisengymnite. See Hydrophite.
Eisenhaltiges titanerz. See Rutile.
Eisenhaltiges titanerz. See Menaccanite.
Eisenkalk. See Siderite.
Eisenkies. See Pyrite.
Eisenkies, rhombischer. See Marcasite.
Eisenkiesel. See Quartz.
Eisenknebelite. See Igelstromite.
Eisenkobalterz. See Smaltite.
Eisenkobaltkies. See Arsenopyrite.
Eisenkobaltkies. See Smaltite.
Eisenmohr. See Magnetite.
Eisenmulm. See Magnetite.
Eisennatrolith. See Natrolite.
Eisennickelkies. See Pentlandite.
Eisenniere. See Siderite.
Eisenniere. See Limonite.
Eisenocker. See Limonite.
Eisenopal. See Opal.
Eisenoxyd. See Hematite.
Eisenoxyd blätteriges, basisch schwefelsaures. See Copiapite.
Eisenoxydhydrat. See Turgite, Goethite, and Limonite.

Eisenoxyd schwefelsaures. See Copiapite, Botryogen, and Jarosite.

Eisenoxyd strahliges, schwefelsaures. See Fibroferrite.

Eisenpecherz. See Triplite.

Eisenpecherz. See Uraninite.

Eisenpecherz. See Pitticite.

Eisenperidot. See Fayalite.

Eisenphosphat von Norwich. See Triphylite.

Eisenphyllit. See Vivianite.

Eisenplatin. See Platinum.

Eisenrahm. See Limonite.

Eisenrahm brauner. See Limonite.

Eisenrahm rother. See Hematite.

Eisenresin. See Humboldtine.

Eisenrose. See Menacannite.

Eisenrosen. See Menaccanite.

Eisenrutil. See Goethite.

Eisensand. See Menaccanite.

Eisenscheel. See Wolframite.

Eisenschefferit. See Pyroxene.

Eisenschüssig kupfergrün. See Chrysocolla.

Eisensinter. See Scorodite.

Eisensinter. See Pitticite.

Eisenspath. See Siderite.

Eisenstassfurtit. See Huyssenite.

Eisenstein, brauner. See Limonite.

Eisensteinmark. See Teratolite.

Eisenstein, roth. See Hematite.

Eisenstein, schwarz. See Psilomelane.

Eisentalk. See Fluorite.

Eisen, tellurisches. See Iron.

Eisentitan. See Menaccanite.

Eisenvitriol. See Melanterite.

Eisenzinkspath. See Smithsonite.

Eisspath. See Orthoclase.

Eisstein. See Cryolite.

EKDEMITE. $Pb_7Cl_4As_2O_8$. Tetragonal.

EKEBERGITE, *Berz.* (Ca, $Na_2)_{12}Al_{16}Si_{27}O_{90}$. Tetragonal. Eckebergite; natrolite of Hesselkulla, *Wollast.*; scapolite pt., *Ekeb.*; skapolith, *Wern.*; sodaite, *Ekeb.*; wernerite pt., *Haüy.*

PARALOGITE: *Nordensk.*

PASSAUITE, *Naum.*: Kaolin; paussauite; porcelain spar, *Dufr.*; porcelain spath, *Dufr.*; porcellanspath; porzelanit; porzellanit, *v. Kob.*; porzellanspath, *J. N. Fuchs.*

EKMANNITE, *Igelström.* $RO+R_2O_3$: SiO_2 4:6:3.

EL ephelite.

ephelite.

Elainspath. See Wernerite.

Elasmose. See Altaite and Nagyagite.

Elasmosine. See Nagyagite.

Elastic bitumen. See Elaterite.

Elastic quartz. See Quartz.

Elastisches erdharz. See Elaterite.

ELATERITE, *Hausm.* C_nH_m. Amorphous. Bitume élastique, *Dela.*; bitumes; cahoutchouc fossile; caoutchouc fossile; depêche; elastic bitumen, *Hatchett*; elastiches erdharz, *Germ.*; elastiches erdpech, *Klapr.*; elaterit dichter; erdharz; fossil caoutchouc; fossiles erdharz, *Hausm.*; mineral caoutchouc; poix minerale elastique, *Brock.*; subterranean fungus, *Lister.*

Elaterit, dichter. See Elaterite.

Elba iron ore. See Hematite.

Electric calamine. See Calamine.

Electrum. See Gold and Succinite.

Elektrischer schörl. See Tourmaline.

Elektrum. See Gold and Succinite.

Eleolite. See Nephelite.

Eleonorite. See Beraunite.

Elhujarit. See Allophane.

Elhuyarit. See Allophane.

Elhuyazite. See Allophane.

ELIASITE, *Haid.* $H_2UO_4PbU_3O_7+7H_2O$. Amorphous. Pittinit, *Herm.*; pittinus inferior, *Breit.*; uranisches pittinerz.

Elie ruby. See Garnet.

Ellagite. Near Natrolite.

Elpasolite. Fluoride of aluminium, sodium, and potassium.

Elroquite. Apple-green hydrosilicate of alumina and iron.

EMBOLITE, *Breith.* Ag (BrCl). Isometric. Chlorobromid of silver, *Domeyko*; chlorobromsilber; chlobromure d'argent, *Domeyko*; megabromite, *Breith.*; microbromit, *Breith.*; mikrobromite, *Breit.*; plata cornea; plata cornea verde, *Domey.*; plata verde.

Embrichtite. See Boulangerite.

Embrithite. See Boulangerite.

Embrithrite. See Boulangerite.

Emerald. See Beryl.

Emerald, Brazilian. See Tourmaline.

Emerald copper. See Dioptase.

Emerald, false. See Fluorite.

Emerald, oriental. See Corundum.

Emerald, precious. See Beryl.

Emerald nickel. See Zaratite.
Émeraude. See Beryl.
Émeraude du Pérou. See Beryl.
Émeraude orientale. See Corundum.
Émeraude vert. See Beryl.
Emeri. See Corundum.
Emeril. See Corundum.
Emerilite. See Margarite.
Emerite. See Corundum.
Emery. See Corundum.
Emerylite. See Margarite.
Emerylith. See Margarite.
Emeryllite. See Margarite.
Emmonite. See Strontianite.
Emmonsite. See Strontianite.
EMPHOLITE. $(Mg, Fe'', Ca)Al_8Si_9O_{31}+8\,H_2O$. Orthorhombic.
EMPLECTITE. $Cu_2Bi_2S_4$. Orthorhombic. Bismuth sulfuré cuprifère; cupreous bismuth, *Phillips*; cupreous sulphuret of bismuth; emplektit, *Kenng.*; hemichalcit, *v. Kob.*; kupferwismutherz, *Klapr.*; kupferwismuthglanz, *Schnei.*; tannenite, *Dana*; wismuthkupfererz, *Selb.*
Emplektit. See Emplectite.
Empyreumatic hydrogen gas. See Marsh gas.
Empyreumatisches hydrogen gas. See Marsh gas.
Empyrodox quartz. See Orthoclase.
Enamel, volcanic. See Orthoclase.
ENARGITE, *Breit.* Cu_3AsS_4. Orthorhombic.
Enceladite. See Warwickite.
Encrinal marble. See Calcite.
Endellione. See Bournonite.
Endellionite. See Bournonite.
Endlichite. See Mimetite.
Engelhardite. See Zircon.
English red. See Limonite.
Enhydrite. See Quartz.
Enhydros. See Quartz.
Enophite. Near Hallite.
Enstadit. See Enstatite.
ENSTATITE, *Kenng.* $(Mg, Fe)SiO_3$. Orthorhombic. Broncit; bronzit, *Karst.*; blättriger anthophyllite, *Wern.*; chladnite, *Shep.*; diallage fibrolaminaire métalloïde, *Haüy*; diallage metalloidal; diallage métalloïde, *H.*; diatomous schiller spar, *Mohs*; enstadit; hemi-prismatic schiller spar, *Mohs*; phæstine, *Breith.*; protobastit, *Streng.*; schiller spar, *Phillips*; schiller spath, *Breit.*; schiller stone, *James.*; spath chatoyant.
Entomous cobalt pyrites. See Ullmannite.
Entomous cobalt pyrites. See Breithauptite.
Enysite. $Cu_2Al_2(OH)_8SO_4$.
Eosite, Schrauf. Vanadio molybdate of lead (?). Tetragonal.
Eosphorite. See Childrenite.
Ephesite, J. L. Smith. Near Margarite.
EPIBOULANGERITE. $Pb_3Sb_2S_6$. Orthorhombic.
EPICHLORITE, *Ramm.* $H_7(Mg, Fe)_4(Al, Fe''')_2Si_4O_{18}$.
Epidosyte. See Epidote.
Epidote. See Zoisite.
EPIDOTE, *H.* $Ca_2Al_3(OH)(SiO_4)_3$. Monoclinic. *Ἐπίδοσις, Haüy* (tr., "qui a reçu un accroissement"); acanticonite, *d'Andra.*; achmatit, *Herm.*; aescherite; akanticone, *d'Andrada*; arenaceous epidote; arendalite, *Karst.*; delphinite, *Saus.*; epidosyte; escherit, *Scheer.*; granular epidote, *Phill.*; pierre de cerin (?), *Haüy*; pistacite, *Wern.*; pistazite, *Wern.*; prismatoidal augite spar; puschkinit, *Wagner*; pusklinit; rosstrevorite; schorl aigue-marine, *Saus.*; — vert du Dauphiné, *de Lisle*; schorza; skorza; strahlstein pt., *Wern.*; stralite; thallite, *Dela.*
BEUSTITE, *Breit.*
BUCKLANDITE: Bagrationite, *Herm.*
WITHAMITE, *Brewst.*
Epidote, arenaceous. See Epidote.
Épidote calcaire. See Zoisite.
Épidote cérifère. See Allanite.
Épidote manganésien. See Piedmontite.
Épidote manganésifère. See Piedmontite.
EPIGENITE, *Petersen.* $4\,Cu_2S.\ 3\,FeS.\ As_2S_5$. Orthorhombic. Arsenikkupferwismutherz, *Sandberger.*
Epiglaubite. Near Metabrushite.
Epiphanite. See Biotite.
Epiphosphorite. See Apatite.
Epimillerite. See Millerite.
EPISTILBITE, *Rose.* $H_4(CaNa_2)Al_2(SiO_3)_6+3\,H_2O$. Orthorhombic. Diphlogenic kouphone spar; monophan, *Breit.*

Epsomensis. See Epsomite.

EPSOMITE, *Beud.* $MgSO_4, 7\,H_2O$. Orthorhombic. Amarus, *Bergm.*; bittersalz, *Wern.*; de sale native cathartico in fodinus Hungariæ recens invento, *Posonii*; epsomensis, *Bergm.*; epsom salt, *Kirwan*; haarsalt pt.; hair salt, *James.*; halotrichum, *Scopoli*; magnesia sulphate; magnesia vitriolata, *Bergm.*; magnésie sulfatée, *Haüy*; naturliches bittersalz, *Wern.*; prismatic epsom salt, *Mohs*; reichardite; sal anglicanum, *Wall*; sal anglicus, *Bergm.*; sal nativum catharticum, *Herm.*; sal neutrum acidulaire, *Wall*; seidlizensis, *Berg.*; sel amer, *Brock.*; sel capillaire, *Brock.*; sel d'Angleterre, *Rome de Lisle*; sel d'Epsom, *de Lisle*; sel de Sedlitz, *de Lisle*; seydschützensis, *Bergm.*; sulphate of magnesia, *Phill.*

Epsom salt. See Epsomite.

Erbenstein. See Aragonite and Calcite.

Erbsenstein. See Aragonite and Calcite.

Erdmite. See Harmotome.

Erdharz. See Elaterite.

Erdharz. See Copalite and Pianzite.

Erdharz. See Euosmite.

Erdige braunkohle. See Mineral coal.

Erdiges erdpech. See Pittolium group.

Erdige talc. See Pyrophyllite and Kaolinite.

Erdkobalt. See Wad.

Erdkobalt, brauner. See Erythrite (?).

Erdkobalt, schwarzer. See Wad.

ERDMANNITE, *Berlin.* $R_3Be_2Si_2O_{10}+3\,H_2O$. Amorphous.

Erdöl. See Naphtha.

Erdpech. See Asphaltum.

Erdpech, elastiches. See Elaterite.

Erdwachs. See Ozocerite.

Eremite. See Monazite.

Erilite. Acicular white crystals in Herkimer County quartz.

Erinite. See Montmorillonite.

ERINITE, *Haid.* $Cu_5(OH)_4(AsO_4)_2$. Crystalline. Cuivre arseniaté rhomboédrique; euchlorglimmer.

Eriocalco. See Eriochalcite.

Eriochalcite. Copper chloride from Vesuvius. Eriocalco.

Erlamite. See Erlanite.

Erlan. See Erlanite.

Supposed to be be a rock; ?; erlan, *Breit.*

Erubyite, A. E. Nordensk. RO, R_2O_3 $3\,SiO_2$. Monoclinic. Anhydrous scolecite; anhydrous scolezite; arktizite; kalk labrador, *Esmm.*; labrador, *Frankenheim*; scolexerose, *Beud.*; wasserfreier scolezite (from Parga), *N. Nordensk.*

Erubescite. See Bornite.

Erusibite. See Jarosite.

Erythrine. See Erythrite.

Erythrite. See Orthoclase.

ERYTHRITE. $Co_3As_2O_8+8\,H_2O$. Monoclinic. Arseniate of cobalt; arseniksaures kobalt; cobalt arseniaté, *Haüy*; — bloom; — coating; — crust; — mica; cobaltic germinations, *Kirwan*; cobalti minera colore rubro, *Wall*; cobalt ocher, *Nicol.*; cobaltum acido arsenico mineralisatum, *Berg.*; diatomous euklas haloid, *Haid.*; erythrine, *Beud.*; fleurs de cobalt, *Brock.*; flos cobalti; hepatic arsenical cobalt; horn cobalt; kobalt blüthe, *Hausm.*; kobalt schwärze; kobold blüthe, *Brückner*; kobelt blomma; kobolt blüthe; ochra cobalti rubra, *Cronst.*; prismatic cobalt mica, *Mohs*; red cobalt; — — ocher, *Jameson.*

EARTHY COBALT BLOOM: Cobalt terreux rayonée rouge, *Brock.*; erdkobalt brauner; kobalt beschlag, *Kersten*; kobolt beslag; rhodoise, *Huot*; rhodoial; rother erdkobalt, *Wern.*

Erythroconite. See Tennantite.

Erythronium. See Vanadinite.

ERYTHROSIDERITE. $K_2Fe'''_2Cl_8+3\,H_2O$. Orthorhombic.

Erythrozincite. See Wurtzite.

Escarboucle. See Garnet.

Escherite. See Epidote.

Eschwégite, *Dufrenoy.* See Anthosiderite.

Esmarkite. See Datolite and Fahlunite.

Esmeraudine. See Dioptase.

Espèce de schorl. See Axinite.

Esprit de sel. See Hydrochloric acid.

Essonite. See Garnet.

Étain d'alluvion. See Cassiterite.

Étain de bois. See Cassiterite.

Étain natif. See Tin.

Étain oxydé. See Cassiterite.

Étain pyriteux. See Stannite.

Étain sulfuré. See Stannite.

Étain vitreux. See Cassiterite.

Ethiopsite. See Tiemannite.
Etites. See Limonite.
ETTRINGITE, *Lehman.* $Ca_6Al_2(OH)_{12}(SO_4)_3+24\ H_2O$. Hexagonal.
EUCAIRITE, *Berz.* $(CuAg)_2Se$. Massive. Argentiferous seleniet of copper; cuivre sélénié; cuivre sélénié argental, *H.*; cupreous seleniuret of silver; eukairit, *Berz.*; selen copper silver; séléniure de cuivre et d'argent; seleniuret of silver and copper, *Phillips*; selenkupfersilber, *Germ.*
Euchlorglimmer. See Erinite.
Euchlorin. $(K, Na)_2Cu_3(SO_4)_3$.
Euchlorite. See Biotite.
Euchlormalachite. See Chalcophyllite.
Euchlormica. See Chalcophyllite.
EUCHROITE, *Breit.* $Cu_2(OH)AsO_4+3\ H_2O$. Orthorhombic. Prismatic emerald malachite, *Mohs.*
Euchsiderite. See Pyroxene.
Euchysiderite. See Pyroxene.
EUCLASE, *Haüy.* $Be_2Al_2(OH)_2(SiO_4)_2$. Monoclinic. Euklas, *Germ.*; prismatic emerald, *Mohs.*
Euclastic disthene spar. See Diaspore.
Eucolite. See Eudialyte.
Eucrasite. See Thorite.
EUCRYPTITE. $Li_2Al_2(SiO_4)_2$. Hexagonal.
Eudialit. See Eudialyte.
EUDIALYTE, *Strom.* $Na_2(Ca, Fe)_3(Si, Zr)_6O_{15}$. Hexagonal. Almandine spar; eudialit; eudyalite.
EUCOLITE. Eukolite, *Scheer.*
EUDNOPHITE. $NaAl(SiO_3)_2+H_2O$. Orthorhombic. Eunophit, *Weibye.*
Eugenesite. See Allopalladium.
Eugenglanz. See Polybasite.
Eukairite. See Eucairite.
Eukamptite. See Voigtite and Biotite.
Euklas. See Euclase.
Euklastic disthene spar. See Diaspore.
Eukolite. See Eudialyte.
Eukrasit. See Thorite.
Eulysit. See Pyroxene and Garnet.
Eulysyte. See Pyroxene and Garnet.
Eulytine. See Eulytite.
EULYTITE. $Bi_4(SiO_4)_3$. Isometric. Arsenikwismuth, *Wern.*; bismuth blende, *Phillips*; bismuth silicate; eulytin, *Breit.*; kieselwismuth, *Kersten*; silicate of bismuth, *Thom.*; wismuthblende, *Breit.*; wismutisches blendeerz, *Breit.*
Eumanite. See Brookite.
EUOSMITE, *Gumbel.* $C_{34}H_{29}O_3$. Amorphous. Erdharz, *Gumbel*; kampferharz, *Gumbel.*
Eunophit. See Eudnophite.
Euphotide. See Amphibole and Serpentine.
Euphotide from the Alps.
Euphotide jadien, Brogniardt.
EUPHYLLITE, *Silliman.* $(Ca, K_2, Na_2)_6Al_{22}(SiO_4)_{27}+12\ H_2O$.
Eupyrchroite. See Apatite.
Euralite. $H_{16}(MgFeCa)_9(AlFe)_4Si_7O_{37}$.
Eusynchit. See Dechenite.
Eutomglanz. See Molybdenite.
EUXENITE, *Scheer.* $(Y_2,Er_2Ce_2)_4(CbO_4)_6(TiO_5)_3(Fe,UO_2)_4(CbO_4)_6(TiO_5)_3$. Orthorhombic.
Euzeolith. See Heulandite.
EVANSITE, *Forbes.* $Al_6(OH)_6P_4O_{11}+15\ H_2O$. Massive. Phosphate d'alumine de Bernon.
EVIGTOKITE. $Al_2Ca_2F_{10}+1_2H_2O$.
Evreinoff. See Rhodonite.
Exanthalose. See Mirabilite.
Excentrischer kalkstein. See Aragonite.
Exitele. See Valentinite.
Exitelite. See Valentinite.
Eye agate. See Quartz.
Eyestone. See Calcite.
Eyestone. See Quartz.
Eytlandite. See Samarskite.
Fädererz. See Jamesonite.
Fältspat. See Orthoclase.
Faerölith. See Thomsonite.
Fahlerz. See Tetrahedrite.
Fahlerz, mercurial. See Tetrahedrite.
Fahles rothgiltigerz. See Miargyrite.
Fahlite. See Tetrahedrite.
Fahl kupfererz. See Tetrahedrite.
Fahl ore. See Tetrahedrite.
Fahlun granat. See Garnet.
FAHLUNITE, *Hisinger.* $R''_2R'''_4Si_5O_{18}+2\ H_2O$. Pseudomorphous. Auralit, *v. Bonsd.*; bonsdorfite; bondsdorffite, *Thomp.*; chlorophyllite, *Jackson*; esmarkite, *Erd.*; fahlunite tendre; hydrated iolite; hydrous iolite, *Bonsd.*: iolithe hydratée; kevil; luscite; pepolit, *Carlsson*; praseolite, *Erd.*; praseolith; prosilithe; raumit, *Bonsd*; scaly triclasite; triclasit, *Hausm.*; triklasit.
ASPASIOLITE, *Scheer.*: Aspasiolith.

FAHLUNITE—Continued.
HURONITE, *Thom.*
POLYCHROILITE, *Weibye.*
PYRARGILLITE, *Nord.*
WEISSITE, *Wacht.*
Fahlunite dure. See Iolite.
Fahlunite, hard. See Iolite.
Fahlunite tendre. See Fahlunite.
Fairfieldite. $(Ca, Mn, Fe)_3(PO_4)_2+2H_2O$. Triclinic.
Falerts. See Tetrahedrite.
Falerz. See Tetrahedrite.
False copper. See Niccolite.
False emerald of copper mines. See Malachite.
False lapis lazuli. See Lazulite.
False topaz. See Quartz.
FAMATINITE. Cu_3SbS_3. Orthorhombic.
Fargite. See Natrolite.
Farina fossilis. See Opal.
Farine fossile. See Calcite.
Faröelite. See Thomsonite.
Fasciculite. See Amphibole.
Faserbaryt. See Barite.
Fasergyps. See Gypsum.
Faserkalk. See Calcite.
Faserkalk. See Aragonite.
Faserkiesel. See Fibrolite.
Faserkohle. See Mineral coal.
Faserquarz. See Quartz.
Faserresin. See Humboldtine.
Faserzeolith. See Natrolite.
Fasriger braunspath. See Mangano calcite.
Fasriger zeolith. See Natrolite.
Fasriger schwerspath. See Celestite.
Fasriger siderit. See Crocidolite.
Fasriges eisenblau. See Crocidolite.
Fassaite. See Pyroxene.
Fassaite, Dolomieu. A zeolite.
Faszait. See Pyroxene.
Fat quartz. See Quartz.
FAUJASITE. *Damour.* $H_4Na_2CaAl_4(SiO_3)_{10}+18H_2O$. Isometric.
FAUSERITE. *Breit* $(Mn, Mg)SO_4+7H_2O$. Orthorhombic. Manganvitriol.
FAYALITE. *Gmelin.* Fe_2SiO_4. Orthorhombic. Anhydrous silicate of iron, *Phill.*; eisenglas, *Germ.*; eisenperidot, *Germ.*; iron chrysolite; iron silicate; péridot ferrique; péridot ferrugineux; silicate of iron, *Thomson*; vulkanisches eisenglas, *Klapr.*
Feather alum. See Halotrichite.
Feather ore. See Jamesonite.
Feather zeolite. See Natrolite.
Federalaun. See Halotrichite.
Federerz. See Jamesonite.
Feijao. See Tourmaline.
Feitsui. See Jadeite.
Feldspar. See Feldspar group.
Feldspar, aventurine. See Oligoclase and Orthoclase.
Feldspar, blue. See Lazulite.
Feldspar, common. See Orthoclase.
Feldspar, fetid. See Orthoclase.
Feldspar, glassy. See Orthoclase.
Feldspar, green. See Orthoclase.
Feldspar, Labrador. See Labradorite.
Feldspar, lime. See Labradorite.
Feldspar, opalescent. See Labradorite.
Feldspar, potash. See Orthoclase.
Feldspar, siliceous. See Albite.
Feldspar, soda. See Albite.
Feldspath. See Feldspar group.
Feldspath apyre. See Andalusite.
Feldspath argilliforme. See Kaolinite.
Feldspath bleu. See Lazulite.
Feldspath compacte. See Orthoclase.
Feldspath du Forez. See Andalusite.
Feldspath, gemeiner. See Orthoclase.
Feldspath, glasiger. See Orthoclase.
Feldspath nacré. See Orthoclase.
Feldspath opalin. See Labradorite.
Feldspath résinite. See Orthoclase.
Feldspath tenace. See Zoisite.
Feldspath terreux. See Kaolinite.
Feldspath Vosgien. See Labradorite.
Feldstein. See Feldspar group.
Felsit von Mulda. See Orthoclase.
Felsit von Marienberg. See Orthoclase.
Felsite. See Albite and Orthoclase.
FELSOBANYITE. $Al_4(OH)_{10}SO_4+5H_2O$. Orthorhombic. Felsöbanyit, *Haid.*
Felsosphärites. See Crystallites.
Felspar. See Feldspar group.
Felstone. See Orthoclase.
Felt-spat. See Orthoclase.
Feltspat hvit. See Albite.
Fer. See Iron.
Fer aciéreux. See Iron.
Fer aimant. See Magnetite.
Fer arséniaté. See Pharmacosiderite.
Fer arséniaté cuprifère. See Scorodite.
Fer arsenical. See Löllingite, Leucopyrite, and Arsenopyrite.
Fer arsenical axotome. See Leucopyrite and Löllingite.

Fer arsenical argentifère. See Arsenopyrite.
Fer arsenical sans soufre. See Leucopyrite and Löllingite.
Fer azuré. See Vivianite.
Fer boraté. See Lagonite.
Fer calcareo-siliceux. See Ilvaite.
Fer carbonaté. See Siderite.
Fer carburé. See Graphite.
Fer chromaté. See Chromite.
Fer chromaté aluminé. See Chromite.
Fer chromé. See Chromite.
Fer de Pallas. See Iron.
Fer hydro-oxide. See Göthite.
Fer limoneux. See Göthite and Limonite.
Fer magnétique. See Magnetite.
Fer météorique. See Iron.
Fer micacé. See Hematite.
Fer minéralisé par l'acide arsénique. See Pharmacosiderite.
Fer molybdaté. See Molybdite.
Fer muriaté. See Molysite.
Fer muriaté. See Pyrosmalite.
Fer natif. See Iron.
Fer noir. See Magnetite.
Fer oligiste. See Hematite.
Fer oligiste argillifère. See Hematite.
Fer oligiste axotome. See Menaccanite.
Fer oligiste bacillaire. See Limonite.
Fer oligiste concretioné. See Hematite.
Fer oligiste ecailleux. See Hematite.
Fer oligiste luisant. See Hematite.
Fer oligiste octaèdre. See Hematite.
Fer oligiste terreux. See Hematite.
Fer oxalaté. See Humboldtine.
Fer oxydé au minimum. See Magnetite.
Fer oxydé. See Hematite.
Fer oxydé brun. See Limonite.
Fer oxydé brun ætite. See Limonite.
Fer oxydé brun granuleux. See Limonite.
Fer oxydé brun ocreux. See Limonite.
Fer oxydé carbonaté. See Siderite.
Fer oxydé cloissoné. See Limonite.
Fer oxydé géodique. See Limonite.
Fer oxydé graphique. See Hematite.
Fer oxydé hæmatite. See Limonite.
Fer oxydé hydraté. See Goethite and Limonite.
Fer oxydé magnétique. See Magnetite.
Fer oxydé pseudomorphique. See Limonite.
Fer oxydé quartzifère. See Corundum.
Fer oxydé résinite. See Pitticite.
Fer oxydé rubigneux globuliforme. See Limonite.
Fer oxydé rubigineux massive. See Limonite.
Fer oxydé rouge. See Hematite.
Fer oxydé terreux. See Dufrenite?
Fer oxydulé. See Magnetite.
Fer oxydulé aimantaire. See Magnetite.
Fer oxydulé titané. See Menaccanite.
Fer oxydulé titanifère. See Iserite.
Fer peroxydé hydraté. See Limonite and Goethite.
Fer phosphaté. See Vivianite.
Fer phosphaté au maximum. See Vivianite.
Fer phosphate bleu. See Vivianite.
Fer phosphaté de Schnéeberg. See Dufrenite.
Fer phosphaté vert. See Dufrenite.
Fer pyrocète. See Hematite.
Fer siliceo-calcaire. See Ilvaite.
Fer sous-sulfaté. See Pitticite.
Fer sous-sulfaté terreux. See Glockerite.
Fer spathique. See Siderite.
Fer speculaire. See Hematite.
Fer sublimé des volcans. See Hematite.
Fer sulfaté. See Melanterite and Botryogen.
Fer sulfaté ocreux. See Pitticite.
Fer sulfaté rouge. See Botryogen.
Fer sulfaté vert. See Melanterite.
Fer sulfuré. See Troilite, Pyrite, and Marcasite.
Fer sulfuré aciculaire radié. See Marcasite.
Fer sulfuré arsenical. See Arsenopyrite.
Fer sulfuré aurifère. See Pyrite.
Fer sulfuré blanc. See Marcasite.
Fer sulfuré capillaire. See Millerite.
Fer sulfuré épigène. See Pyrite.
Fer sulfuré ferrifère. See Pyrrhotite.
Fer sulfuré jaune. See Pyrite.
Fer sulfuré magnétique. See Pyrrhotite.
Fer terreux argileux. See Limonite.
Fer terreux bleu. See Vivianite.
Fer terreux limoneux. See Limonite.
Fer titané. See Menaccanite.
FERBERITE, *Liebe.* $FeWO_4$. Crystalline.

FERGUSONITE, *Haid.* $Y(Nb,Ta)O_4$. Tetragonal. Arrhenite; yttrotantalite, brauner; yttrotantalite, yellow.
BRAGITE, *Forbes* and *Dahl.*
TYRITE, *Forbes.*
YTTERBY MINERAL, *Nord.*

Ferricalcite. See Cerite.

Ferrite. Vogelsang's name for the undetermined amorphous oxide of iron in many rocks.

Ferrocalcite. See Calcite.

Ferrocobaltine. See Cobaltite.

Ferrocobaltite. See Cobaltite.

Ferroilmenite. See Columbite.

Ferrotantalite. See Tantalite.

Ferrotellurite. $FeTeO_4$. Crystalline.

Ferrotitanite. See Schorlomite.

Ferrotungsten. See Tammite.

Ferrowolframite. See Wolframite.

Ferruginous chlorite. See Delessite.

Ferruginous jasper. See Quartz.

Ferruginous lithomarge. See Teratolite.

Ferruginous opal. See Opal.

Ferruginous oxide of columbium. See Columbite.

Ferruginous oxide of titanium. See Menaccanite.

Ferruginous oxide of tungsten. See Wolframite.

Ferruginous phosphate of manganese. See Triplite.

Ferruginous silicate of maganese. See Willemite.

Ferruginous quartz. See Quartz.

Ferruginous zinc spar. See Smithsonite.

Ferrum arsenico mineralisatum. See Wolframite.

Ferrum calciforme terra quadam incognite intime mixtum. See Cerite.

Ferrum cum magnesio et terra calcarea acido aereo, mineralisatum. See Siderite.

Ferrum limosum. See Limonite.

Feste uranokker. See Gummite.

Festungsachat. See Quartz.

Fetid carbonate of lime. See Calcite.

Fetid limestone. See Calcite.

Fetid sulphate of barytes. See Barite.

Fetid quartz. See Quartz.

Fettbol. See Chloropal.

Fettquarz. See Quartz.

Fettstein. See Nephelite.

Feuerblende. See Pyrostilpnite.

Feuerluft. See Carbonic acid.

Feueropal. See Opal.

Feuerstein. See Quartz.

Feu grisou. See Carbonic acid.

FIBROFERRITE, *Rose.* $Fe'''_6(OH)_8(SO_4)_5+23\ H_2O$. Orthorhombic. Copiapite, *Smith*; eisenoxyd, strahliges schwefelsaures; stypticit, *Haum.*

FIBROLITE, *Bournon.* Al_2SiO_5. Monoclinic. Bournonite, *Lucas*; faserkiesel, *Lindacker*; fibrolith.
BAMLITE, *Erdm.*
SILLIMANITE, *Bowen*: Bucholzite, *Brandes*; hydrobucholzite; monrolite, *Silliman*; monrolith.
WOERTHITE, *Hess*: Woerdhite.

Fibrolith. See Fibrolite.

Fibrous alum? Hydrous sulphate of alumina.

Fibrous bismuth. See Bismuth.

Fibrous blende. See Sphalerite.

Fibrous brown coal. See Mineral coal.

Fibrous brown iron ore. See Limonite.

Fibrous calcite. See Calcite.

Fibrous coal. See Mineral coal.

Fibrous gypsum. See Gypsum.

Fibrous heavy spar. See Celestite.

Fibrous quartz. See Quartz.

Fibrous stypticite. See Copiapite.

Fibrous sulphur. See Sulphur.

Fibrous zeolite. See Mesolite.

Fibrous zeolite. See Scolecite.

FICHTELITE, *Bromeis.* C_5H_8. Monoclinic. Fichtelith.
TECORETIN: Tekoretin, *Forchh.*; thecoretine.

Fichtelith. See Fichtelite.

Ficinite, Bernh. A ferrous phosphate. Monoclinic.

Fieldite. See Tetrahedrite.

Figura hyacinthica, etc.: hæc crystalli non sunt calcareæ, sed siliceæ. See Harmotome.

Figure stone. See Talc, Pinite, and Biharite.

FILLOWITE. $(Mn, Ca, Fe, Na_2)_3(PO_4)_2+\frac{1}{2}\ H_2O$. Monoclinic.

Finbo-tantalit. See Tantalite.

Fiorite. See Opal.

Fireblende. See Pyrostilpnite.

Fire garnet. See Garnet.

Fire marble. See Calcite.

Fire opal. See Opal.

Fire stone. See Opal.

Firuzegi. See Turquois.

Galapectite. See Halloysite.
Galapektit. See Halloysite.
Galena. See Galenite.
Galena blendosa. See Huascolite.
Galena cobriza. See Cuproplumbite.
Galena de bismuth. See Bismuthinite.
Galena inanis. See Sphalerite.
Galenæ genus tertium omnis metalli inanissimum. See Hematite.
Galène See Galenite.
GALENITE, *von Kob.* PbS. Isometric. Antizon bleiglanz; antozon bleiglanz; blaubleierz, *Wern.*; bleiglanz; bleimulm; bleisanderz; blue lead; blyglantz; galena, *Plin.*; galène; grauerz; hexahedral galena, *James.*; — lead glance, *Mohs*; knits; lead glance, *James.*; — sulphuret; molybdæna pt.; nolascite; pleiertz; pleiglanz, *Agric.*; pleischweiss, *Agric.*; plomb bleu, *Brock.*; — sulfuré; — — epigène; — — prismatique epigène; plumbago; plumbum sulphure et argento mineralisatum, *Wall*; potter's lead ore; — ore; sinkanite, *Croer.*; slickensides; specular galena; sulphuret of lead, *Phillips.*

ARGENTIFEROUS GALENA: Lead, argentiferous; plomb argentifère.

AURIFEROUS GALENA.

BLEISCHWEIF.

FOURNETITE.

JOHNSTONITE, *Haid.*: Burning galena; plomb sursulfuré; supersulphide of lead; supersulphuretted lead, *Johnston*; ueberschwefelblei.

SEXANGULITES: Plombeine; plumbeine, *Breit.*

STEINMANNITE, *Zippe.*; Sulphuret of lead and antimony, *Phillips.*

TARGIONITE: Jargionite, *Bechi.*

GALENOBISMUTITE. $PbBi_2S_4$. Massive. Bleiwismuthglanz.
Galenoceratite. See Phosgenite.
Galizensten. See Goslarite.
Gallicianite. See Goslarite.
Gallio antico. See Calcite.
Gallicinite. See Goslarite.
Gallitzenite. See Goslarite.
Gallitzenstein. See Goslarite.
Gallizinite. See Menaccanite.
Gallixinite. See Goslarite.
Gallmeja. See Calamine.
Galmei. See Calamine.
Galmeja. See Calamine.
Galmey. See Calamine and Smithsonite.
Gamsigradite. See Amphibole.
GANOMALITE, *Nordensk.* (Pb, Mn, Ca, Mg)SiO_3. Crystalline.
Ganomatite. See Chenocoprolite.
Gänseköthigerz. See Chenocoprolite.
Gapite. See Millerite.
Garnet blende. See Sphalerite.
Garamanticus. See Garnet.
Garamantic carbuncle. See Garnet.
Garbenstilbite. See Stilbite.
GARNET. $R''_3R'''_2(SiO_4)_3$. Isometric. *Ἄνθραξ* pt., *Theoph.* Alabandicus; almandin, *Agric.*; amethystizontes, *Plin.*; anthracitis, *Plin.*; carbuncle; carbunculus pt.; — alabandicus; — carchedonius; — troezenius; Carthagenian carbuncle; dimanthoid; dodecahedral garnet, *Mohs*; garamantic carbuncle; garamanticus; granat, *Wern.*; granatus; grenat, *Broch.*; guarnaccino; hyacinth; — garnet; — — la bella; jacinta la bella; prismatoidal garnet rubino di rocca; vermeille.

ALUMINA GARNETS.

ALMANDITE (*Iron-alumina garnet*): Alabandicus, *Plin.*; almandine; — garnet; amethystizontes (?); common garnet pt.; fahlungranat, *Berz.*; granat, edler; grenat almandin; — brun, *Haüy*; noble garnet; oriental garnet; orientalischer granat; precious garnet pt.; rose garnet; sirianischer granat, *Klapr*; Syrian garnet.

GROSSULARITE (*Lime-alumina garnet*): Canehlstein; cinnamon stone, *Phillips*; essonite, *H.*; grenat de chaux; — grossulaire; grossulaire, *Beud.*; grossular, *Phillips*; groszular; hessonite, *Leonh.*; hyacinthe de Ceylon; kalkgranat; kaneelstein, *Wern.*; kanelstein, *Wern.*; leucogarnet; leukogranat; romanzovit, *Nordensk.*; romanzowite; succinite, *Bonvoisin*; white garnet; white grossular; wiluite pt., *Severg.*

PYROPE, *Wern.* (*Magnesia alumina garnet*): Bohemian garnet; böhmischer granat; carbuncle; — carchedonii in Boëmorum agris, *Agric.*; carbunculus; carchedonius Ceylon garnet; elie ruby; escarboucle, *French*; fire garnet; grenat rouge de feu granuli-

Flusserde. See Fluorite.
Flussspath. See Fluorite.
Flussyttrocalcit. See Yttrocerite.
Foaming earth. See Calcite.
Foliated arseniate of copper. See Chalcophyllite.
Foliated black manganese ore. See Hausmannite.
Foliated coal. See Mineral coal.
Foliated copiapite. See Copiapite.
Foliated tellurium. See Nagyagite.
Foliated zeolite. See Heulandite.
Fontainebleau limestone. See Calcite.
Forbesite. $(Ni, Co)_2As_2O_7+8\ H_2O$. Crystalline. Arseniate of nickel and cobalt; chanaralite; hydrous bibasic arseniate of nickel and cobalt, *Forbes*: nickel tribasic arsenate.
Forcherite. See Opal.
Foresite. See Stilbite.
FORSTERITE, *Lery.* Mg_2SiO_4. Orthorhombic. Peridoto bianco, *Scacchi*; white chrysolite; white olivine.
BOLTONITE, *Shep.*
Fortification agate. See Quartz.
Fossil caoutchouc. See Elaterite.
Fossil carbon.
Fossil copal. See Succinite.
Fossiles erdharz. See Elaterite.
Fossiles harz. See Krantzite.
Fossil farina. See Calcite.
Fournelite. See Tetrahedrite.
Fournetite. See Galenite.
Fowlerite. See Rhodonite.
Francolite. See Apatite.
Frankenburg corn-ears. See Chalcocite.
FRANKLANDITE. $H_2Na_2Ca(BO_2)_6+6\ H_2O$.
FRANKLINITE, *Berth.* (Fe, Mn, Zn) Fe_2O_4. Isometric. Dodecahedral iron ore, *Mohs*; isophane, *Berth.*; siderite zincifère; zinc oxide ferrifère, *Haüy.*
Frauencis. See Gypsum.
Frauenglas. See Mica.
Fredricite. See Tennantite.
Freibergite. See Tetrahedrite.
FREIESLEBENITE. 5 (Pb, Ag_2)S. 2 Sb_2S_3. Monoclinic. Antimonial sulphuret of silver; argent gris antimonial, *de Lisle*; argent sulfuré antimonifère et cuprifère, *Lery*; argent sulfuré plombifère; delislite, *Leymerie*; donacargyrite, *Chap.*; dunkles weissgültigerz, *Klapr.*; silver gray; mine d'antimoine grise tenant argent, *de Lisle*; mine d'argent grise antimonial; peritomous antimony glance, *Mohs*; schilfglaserz, *Freies.*; schwefelsilber; silber und antimon; silver antimony sulphuret; sulphuret of silver and antimony, *Freies.*
French chalk. See Talc.
Frenzelite. See Guanajuatite.
Freyalite. SiO_2, ThO_2, Ce_2O_4, H_2O, etc.
Friable lithomarge. See Kaolinite.
FRIEDELITE. $H_4Mn_4(SiO_4)_3$. Hexagonal.
FRIESEITE. $Ag_2Fe_2S_3$. Orthorhombic.
Frigidite. See Tetrahedrite.
FRITZSCHEITE. $MnU_2P_2O_{12}+8\ H_2O$. Orthorhombic.
Frugardite. See Vesuvianite.
Fuchsite. See Muscovite.
Fulgurite. See Quartz.
Fuller's earth. See Smectite and Kaolinite.
Fullonite. See Goethite.
Funkite. See Pyroxene.
Fuscite. See Wernerite.
Fusible hornstone. See Orthoclase.
Fusible quartz. See Orthoclase.
Gabbro. See Amphibole.
Gabbrorosso. See Serpentine.
Gabronite, Schumacher. Altered Wernerite.
Gadolin. See Gadolinite and Allanite.
Gadolinite. See Allanite.
GADOLINITE, *Klapr.* $Be_2(YO)_2FeSi_2O_5$. Monoclinic. Gadolin: prismatic; gadolinite, *Mohs*; schwarzer zeolit, *Geyer*; silicate of alumina, oxyd of iron and a new earth, *Gadolin*; ytterbite, *Gadolin*; yttrite.
Gæbhardite. See Muscovite.
Gagat. See Mineral coal.
Gagates. See Mineral coal.
Gahnite. See Vesuvianite.
GAHNITE, *von Moll.* $ZnAl_2O_4$. Isometric. Octahedral corundum, *Mohs*; spinelle zincifère, *H.*; spinellus zincperius, *Breit.*; zinc spinel.
AUTOMOLITE, *Ekeberg.* (Zinc gahnite. Automalite, *Nicol*; automolith.
DYSLUITE, *Keating.* (Zinc manganese iron gahnite.)
KREITTONITE, *v. Kob.* (Zinc iron gahnite.)
Galactite. See Natrolite.
Galaktit. See Natrolite.

ee Halloysite.
) Halloysite.
lenite.
a. See Huascolite.
See Cuproplumbite.
uth. See Bismuthinite.
See Sphalerite.
tertium omnis metalli
1. See Hematite.
enite.
n *Kob.* PbS. Isometric.
lanz; antozon bleiglanz; *Wern.*; bleiglanz; bleianderz; blue lead; blyia, *Plin.*; galène; graulral galena, *James.*; — *Johs*; knits; lead glance, lphuret; molybdæna pt.; iertz; pleiglanz, *Agric.*; *Agric.*; plomb bleu, ulfuré; — — epigène; tique epigène; plumban sulphure et argento n, *Wall*; potter's lead sinkanite, *Croer.*; slickular galena; sulphuret *lips.*
S GALENA: Lead, argenmb argentifère.
ALENA.

Haid.: Burning galena; lfuré; supersulphide of ulphuretted lead, *John*hwefelblei.
: Plombeine; plumbeine,

Zippe.; Sulphuret of mony, *Phillips.*
argionite, *Bechi.*
UTITE. $PbBi_2S_4$. Massmatiglanz.
See Phosgenite.
e Goslarite.
e Goslarite.
See Calcite.
Goslarite.
e Goslarite.
See Goslarite.
Monaccanite.
Goslarite.
alamine.
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Galmey. See Calamine and Smithsonite.
Gamsigradite. See Amphibole.
GANOMALITE, *Nordensk.* (Pb, Mn, Ca, Mg)SiO_3. Crystalline.
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Gänseköthigerz. See Chenocoprolite.
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Garamanticus. See Garnet.
Garamantic carbuncle. See Garnet.
Garbenstilbite. See Stilbite.
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PYROPE, *Wern.* (*Magnesia alumina garnet*): Bohemian garnet; böhmischer granat; carbuncle; — carchedonii in Boëmorum agris, *Agric.*; carbunculus; carchedonius Ceylon garnet; elie ruby; escarboucle, *French*; fire garnet; grenat rouge de feu granuli-

GARNET
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OSLARITE—Continued.
translucidum, crystalli instar, *Agric.*; couperose blanche, *Fr.*; galizensten, *Wall.*; gallicianite; gallicinite; gallitzenite, *Beud.*; gallizenstein; gallizinite, *Beud.*; hvit viktril, *Wall.*; prismatic vitriol salt, *Mohs*; sulphate of zinc, *Phillips*; vitriol blanc; vitriol de Goslar; vitriolum album; vitriolum zinci album nativum, *Wall.*; white copperas; white vitriol, *Allan*; zinc sulfaté, *Fr.*; zinc sulphate; zinc vitriol, *Kirwan*; zink vitriol, *Hausm.*

Iothardite. See Dufrenoysite.

IÖTHITE, *J. G. Lenz.* $H_2Fe'''_2O_4$. Orthorhombic. Brown hematite pt., *Jameson*; brown iron ore pt.; brown ironstone pt.: clay ironstone pt.; eisen oxyd hydrat; eisen rutil; fer hydro oxidé, *Bourn*: fer limoneux: fer oxydé hydraté, *Haüy*; fer peroxydé hydraté; dünnschuppiger eisenglimmer, *Becher*; haarformiges brauneisenstein; iron hydrous oxyd; iron rutile; kryst. fasriger brauneisenstein, *Mohs*; linsenformiger eisenglimmer; ochreous iron ore; ore of titanium; oxide of iron; pecheisenerz; pisiform iron ore.

CHILEITE, *Breit.*

LEPIDOCROCITE: Lepidokrokit, *Ullman*; schüppig fasriger brauneisenstein.

NEEDLE IRONSTONE: Nadeleisenerz, *Breit.*; nadeleisenstein.

ONEGITE, *Andre*: Fullonite.

PRZIBRAMITE, *Glock.*: Pribramit; sammetblende; sammetblende pt.; sammteisenerz; samteisenerz.

PYRRHOSIDERITE, *Hausm.*: Pyrosiderite; rubinglimmer, *Hausm.*; rubinrother eisenglimmer.

Iotthardite. See Dufrenoysite.

Iotthardtite. See Dufrenoysite.

Ioudron minerale. See Pittolium group.

Ioutte de sang. See Spinel.

Iouttes d'eau. See Topaz.

IOYAZITE. $Al_{10}Ca_3P_3O_{28}+9\ H_2O$.

Irahamite, *Wurtz*; near asphaltum. Coal or asphalt. *Leuley.*

Iramenite. See Chloropal.

Irammatite. See Amphibole.

Irammite. See Wollastonite.

Granat. See Garnet.

Granat edler. See Garnet.

Granatfels. See Garnet.

Granatite. See Staurolite.

Granatoide. See Garnet.

Granatus. See Garnet.

Granat von Longbau. See Garnet.

Grängesite. See Prochlorite.

Granite. See Quartz, Orthoclase, and Muscovite.

Granosphärites. See Crystallites.

Granular corundum. See Corundum.

Granular epidote. See Epidote.

Granular heavy spar. See Barite.

Granular iron ore. See Limonite.

Granular quartz. See Quartz.

Granulina. Scacchi. Hydrated silica of high specific gravity.

Granulyte. See Orthoclase and Albite.

Graphic gold. See Sylvanite.

Graphic granite. See Orthoclase.

Graphic telluriuun. See Sylvanite.

GRAPHITE, *Wern.* C. Hexagonal; black lead; bly-ertz, *Bromell*; blyerz pt.; carbone; carburet of iron; drawing lead; fer carburé, *Fr.*; graphite mica; kohleneisenstein; mica des peintres, *Fr.*; mica des crayons, *Fr.*; mica pictoria nigra, *Wall.*; mine de plomb noir; molybdæna, *Bromell*; molybdænum, *Linn.*; plombagine, *de Lisle*; plombagine vulgaire; plumbago, *Bromell*; reissbley, *Germ.*; rhombohedral graphite; rhombohedral graphite mica, *Mohs*; tenasserime, *Mason*; tremenheerite, *Piddington*; wad, *Allan.*

Graphit schaumartiger. See Wad.

Graphite mica. See Graphite.

Grastite. See Ripidolite.

Graubraunstein. See Pyrolusite and Manganite.

Graubraunsteinerz. See Pyrolusite and Manganite.

Grauer speiskobold. See Smaltite.

Grauer speisskobold. See Smaltite.

Grauertz. See Tetrahedrite.

Grauerz. See Galenite.

Graugiltigerz. See Tetrahedrite.

Graukobalterz. See Jaipurite.

Graukupfererz. See Tennantite and Tetrahedrite.

Graulite. See Tecticite.

Graumanganerz. See Pyrolusite and Manganite.

Glaskopf brauner. See Limonite.
Glaskopf rother. See Hematite.
Glaskopf schwarzer. See Psilomelane.
Glasopal. See Opal.
Glasschörl. See Axinite.
Glasspat. See Fluorite.
Glass-schörl. See Axinite.
Glass-stein. See Axinite.
Glass, volcanic. See Orthoclase.
Glassy actinolite. See Amphibole.
Glassy asbestos. See Amphibole.
Glassy felspar. See Orthoclase.
Glassy quartz. See Quartz.
Glätte. See Massicot.
Glaubapatite. See Guano.
GLAUBERITE, *Brong.* $Na_2SO_4.CaSO_4$. Monoclinic. Anhydrous sulphate of soda and lime, *Cleveland*; brithyne salt, *Mohs*; brongniartin, *v. Leonh.*; hemiprismatic brythine salt, *Mohs*; polyalithe de Vic; polyalithe grise de Vic; polyalithe d'Ischel; polyhalite de Vic; prismatic brithyne salt, *Mohs*.
Glauber salt. See Mirabilite.
Glauber salz. See Mirabilite.
Glaucodot of Orawicza. See Alloclasite.
GLAUCODOT, *Breit.* (Co, Fe)(As, S). Orthorhombic.
GLAUCOLITE, *Fischer.* $Ca_6Al_8(SiO_4)_9$. Tetragonal. Glaucolith; glaukolith.
Glaucolith. See Glaucolite.
GLAUCONITE. $R''_2R'''_4Si_9O_{26}+6\ H_2O$. Amorphous. Glaukonie; glaukonit, *Keferstein*; green earth pt., *Kirwan*; grünerde pt., *Germ.*; grünstein; terre vert pt., *Fr.*; terre vert de Framont.
CHLOROPHÄNERITE, *Jenzsch*: Chlorophacite; chlorophanesite.
Glauconite rocks. Hislopite, *Haughton*.
GLAUCOPHANE, *Hausm.* $R''_9R'''_4(Si\ O_3)_{15}$. Monoclinic.
GLAUCOPYRITE, *Sandb.* $(Fe, Co.(As, Sb, S)_2$. Orthorhombic. Glaukopyrit.
Glaukodot. See Alloclasite.
Glaukolith. See Glaucolite.
Glaukonie. See Glauconite.
Glaukonit. See Glauconite.
Glaukopyrit. See Glaucopyrite.
Glaukosiderit. See Vivianite.
Glimmer. See Mica group.
Glimmer. See Talc.
Glimmer optisch-einaxiger. See Biotite.
Glimmer optisch-zweiaxiger. See Muscovite.
Glinkite. See Chrysolite.
Glist. See Muscovite.
Globosite. Near Dufrenite.
Globosphärites. See Crystallites.
Globular jasper. See Quartz.
Globular quartz. See Quartz.
Globulites. See Crystallites.
Glock. See Pimelite.
GLOCKERITE, *Naum.* $Fe'''_4SO_9+6H_2O$ Massive. Fer sous-sulfaté terreux, *Berz.*; pittizite, *Beud.*; vitriol ocher; vitriolocker, *Berz.*
Glossecollite. See Halloysite.
Glossecolith. See Halloysite.
Glottalite. See Analcite, Chabazite and Edingtonite.
Glottalithe. See Edingtonite.
Gmelinite. See Herschellite.
GMELINITE, *Brooke.* $(Ca, Na_2)Al_2(SiO_3)_4+6\ H_2O$. Hexagonal. Chabazie de soude; groddeckite; hydrolite, *Beud.*; hydrolith, *Leman*; hydrotite; nitro chabasit; soda chabazite.
LEDERERITE, *Jackson*.
SARCOLITE, *Vauq.*: Sarcolithe.
Gneiss. See Orthoclase and Quartz.
Gökumite. See Vesuvianite.
GOLD. Au(Ag). Isometric. Double gold; gediegen gold, *Wern.*; hexahedral gold, *James.*; native gold; or natif, *H.*; rolled gold; scale gold; sol, *Alchem.*; wash gold.
ARGENTIFEROUS GOLD, *Phillips*: Electrum, *Pliny*; elektrum; or argentifère.
BISMUTHAURITE, *Shep.*: Bismuth gold. A furnace product.
PALLADIUM GOLD: Auropoudre; or poudre; or palladié; palladium aurifère; porpezite, *Frobel*.
RHODIUM GOLD: Rhodite, *Adam*; rhodium.
GOLD AMALGAM, *Schneid.* $(Au,Ag)_2Hg_3$. Isometric. Amalgam d'or; amalgam gold; or amalgam or blanc de Colombie.
Goldtellur. See Sylvanite.
Gongylite. See Pinite.
Goose-dung ore. See Chenocoprolite.
Goshenite. See Beryl.
GOSLARITE. $ZnSO_4+7\ H_2O$. Orthorhombic. Atramentum album sile durum Goslarianum, Goslar atramentum sutorium, candid potissimum reperitur Goslar

FE—Continued.
idum, crystalli instar, couperose blanche, *Fr.*; gal-, *Wall.*; gallicianite; galli-gallitzenite, *Beud.*; gallizen-llizinite, *Beud.*; hvit viktril, prismatic vitriol salt, *Mohs*; of zinc, *Phillips*; vitriol vitriol de Goslar; vitriolum vitriolum zinci album nati-*ll.*; white copperas; white *Allan*; zinc sulfaté, *Fr.*; zinc ; zinc vitriol, *Kirwan*; zink *Hausm.*

See Dufrenoysite.

J. G. Lenz. $H_2Fe'''_2O_4$. Or-bic. Brown hematite pt., ; brown iron ore pt.; brown e pt.; clay ironstone pt.; yd hydrat; eisen rutil; fer idé, *Bourn*; fer limoneux; fer ydraté, *Haüy*; fer peroxydé ; dünnschuppiger eisenglim-*her*; haarformiges brauneis-iron hydrous oxyd; iron kryst. fasriger brauneisen-*lohs*; linsenformiger eisen-; ochreous iron ore; ore of ; oxide of iron; pecheisen-form iron ore.

Breit.

OCITE: Lepidokrokit, *Ull-*hüppig fasriger brauneisen-

IRONSTONE: Nadeleisenerz, adeleisenstein.

Andre: Fullonite.

ITE, *Glock.*: Pribramit; sam-; sammetblende pt.; sam-erz; samteisenerz.

DERITE, *Hausm.*: Pyrosider-inglimmer, *Hausm.*; rubin-senglimmer.

. See Dufrenoysite.

e. See Dufrenoysite.

minerale. See Pittolium

ang. See Spinel.

au. See Topaz.

E. $Al_{10}Ca_3P_2O_{23}+9\ H_2O$.

Turtz; near asphaltum. Coal lt. *Lesley.*

See Chloropal.

. See Amphibole.

See Wollastonite.

Granat. See Garnet.

Granat edler. See Garnet.

Granatfels. See Garnet.

Granatite. See Staurolite.

Granatoide. See Garnet.

Granatus. See Garnet.

Granat von Longbau. See Garnet.

Grängesite. See Prochlorite.

Granite. See Quartz, Orthoclase, and Muscovite.

Granosphärites. See Crystallites.

Granular corundum. See Corundum.

Granular epidote. See Epidote.

Granular heavy spar. See Barite.

Granular iron ore. See Limonite.

Granular quartz. See Quartz.

Granulina. Scacchi. Hydrated silica of high specific gravity.

Granulyte. See Orthoclase and Albite.

Graphic gold. See Sylvanite.

Graphic granite. See Orthoclase.

Graphic telluriuun. See Sylvanite.

GRAPHITE, *Wern.* C. Hexagonal; black lead; bly-ertz, *Bromell*; blyerz pt.; carbone; carburet of iron; drawing lead; fer carburé, *Fr.*; graphite mica; kohleneisenstein; mica des peintres, *Fr.*; mica des crayons, *Fr.*; mica pictoria nigra, *Wall.*; mine de plomb noir; molybdæna, *Bromell*; molybdænum, *Linn.*; plombagine, *de Lisle*; plombagine vulgaire; plumbago, *Bromell*; reissbley, *Germ.*; rhombohedral graphite; rhombohedral graphite mica, *Mohs*; tenasserime, *Mason*; tremenheerite, *Piddington*; wad, *Allan.*

Graphit schaumartiger. See Wad.

Graphite mica. See Graphite.

Grastite. See Ripidolite.

Graubraunstein. See Pyrolusite and Manganite.

Graubraunsteinerz. See Pyrolusite and Manganite.

Grauer speiskobold. See Smaltite.

Grauer speisskobold. See Smaltite.

Grauertz. See Tetrahedrite.

Grauerz. See Galenite.

Graugiltigerz. See Tetrahedrite.

Graukobalterz. See Jaipurite.

Graukupfererz. See Tennantite and Tetrahedrite.

Graulite. See Tecticite.

Graumanganerz. See Pyrolusite and Manganite.

Grausilber. See Selbite.
Grauspiessglanzerz. See Stibnite.
Grauspiessglaserz. See Stibnite.
Grautellur. See Sylvanite.
Gray antimonial copper. See Tetrahedrite.
Gray antimony. See Stibnite.
Gray arsenical copper. See Tetrahedrite.
Gray cobalt. See Smaltite.
Gray cobalt ore. See Smaltite.
Gray copper. See Tennanite and Tetrahedrite.
Gray copper ore. See Tetrahedrite.
Gray manganese. See Pyrolusite and Manganite.
Gray manganese ore. See Pyrolusite and Manganite.
Gray nickeliferous antimony. See Ullmannite.
Gray ore. See Chalcocite.
Gray oxide of manganese. See Manganite and Pyrolusite.
Gray silver ore. See Selbite.
Gray sulphuret of copper in dodecahedral crystals. See Tennantite.
Greasy quartz. See Quartz.
Green avanturine. See Quartz.
Green calamine. See Aurichalcite.
Green carbonate of copper. See Malachite.
Green diallage. See Amphibole and Pyroxene.
Green earth. See Celadonite and Glauconite.
Green earth of Verona. See Celadonite.
Green iron earth. See Hypochlorite and Chloropal.
Green iron ore. See Dufrenite.
Green lead ore. See Pyromorphite.
Green lead spar. See Pyromorphite.
Green malachite. See Malachite.
Green martial earth. See Hypochlorite.
Green oxide of uranium. See Torbernite.
Green sand of Peru. See Atacamite.
Green silicate of manganese. See Rhodonite.
Green vitriol. See Melanterite.
Greenlandite. See Columbite.
GREENOCKITE, *James.* CdS. Hexagonal cadmium blende; cadmium ochre; cadmium sulfuré, *Fr.*; cadmium sulphuret; sulphuret of cadmium, *Connel.*
Greenovite. See Titanite.
Grégorite. See Menaccanite.
Grenat. See Garnet.
Grenat à prisme quadrilatère. See Zircon.
Grenat almandin. See Garnet.
Grenat blanc. See Leucite.
Grenat blanc calcaire. See Leucite.
Grenat brun. See Garnet.
Grenat chromifère. See Garnet.
Grenat du chaux. See Garnet.
Grenat du Vésuve. See Leucite.
Grenat ferrifère. See Chrysolite.
Grenat grossulaire. See Garnet.
Grenat manganèse. See Garnet.
Grenat manganésien. See Garnet.
Grenat mélanite. See Garnet.
Grenat noble. See Garnet.
Grenat noir. See Garnet.
Grenat résinite. See Garnet.
Grenat rouge de feu granuliforme. See Garnet.
Grenat Syrien. See Garnet.
Grenat titanifère. See Garnet.
Grenat yttrifère. See Garnet.
Grenatite. See Staurolite.
Grengesite. See Prochlorite.
Grinding spar. See Corundum.
Grobkohle. See Mineral coal.
GROCHAUITE. *Websky.* (Mg, Fe)$_4$ $Al_2Si_2O_{11}+3\ H_2O$. Monoclinic?
Groddeckite. See Gmelinite.
Grön blyspat. See Pyromorphite.
GROPPITE, *Svanberg.* $R''_2R'''_2Si_3O_{11}+2\ H_2O$. Crystalline.
Groroilite. See Psilomelane and Wad.
Groroilith. See Psilomelane and Wad.
Grossulaire. See Garnet.
Grossular. See Garnet.
Grossularite. See Garnet.
Groszular. See Garnet.
GROTHITE. $(CaMn)_9R'''_2Ti_6Si_6O_{30}$. Monoclinic. Titanite, *P. Groth.*
GRÜNAUITE, *Nicol.* Ni, Bi, Fe, Co, Cu, S. Isometric. Bismuth nickel, *Dana*; nickel bismuth glance; nickel sulfuré bismuthifère; nickel wismuth glanz, *v. Kobell*; sayuit, *v. Kobell*; wismuthnickelkies.
Grünbleierz. See Pyromorphite and Mimetite.
Grünbleyerz. See Pyromorphite.
Grüneisenerde. See Dufrenite and Prochlorite.
Grüneisenstein strahlig. See Dufrenite.

See Glauconite and Celado-

crystallisirte. See Pyrox-

nerz. See Rhodonite.
See Glauconite.
See Amphibole.
nmer. See Torbernite.
riol. See Melanterite.
See Amphibole.
nerz. See Torbernite.
arite. See Metacinnabarite.
te. See Metacinnabarite.
JATITE, *Fernandez.* Bi_2
Orthorhombic. Castillite,
; frenzelite, *Dana*; silaonite;
smuthglanz, *Castillo.*
hep. Mixture of K_2SO_4, $(NH_4)_2$
$(NH_4)_2C_2O_4$.
See Oxammite.
See Struvite.
anbapatite, *Shepard*; pyro-
Shepard; pyrognanite, *Shep-*
roklasit.
, *Shep.* Alleged compound of
nd NH_4NO_3.
ULITE, *Wibel.* $(NH_4)_2K_4$
6 $KHSO_4$+4 H_2O. Crystal-

TE, *Guiscardi.* (Ca, Ti)SiO_3.
ombic.
no. See Garnet.
te. See Enargite.
TE, *Cumenge.* $Cu_2Sb_4S_7$. Or-
nbic.
See Löllingite.
nésien. See Brucite.
TANITE. $As_8Pb_{10}S_{19}$.
ent sten. See Copiapite.
pas. See Chrysolite.
rmalm. See Chalcopyrite.
near Pinite.
See Plumbogummite.
nispath. See Plumbogummite.
. See Gummite.
nerum. See Asphaltum.
ath. See Plumbogummite.
din. See Opal.
E. $(U_2Fe_2)(OH)_6$. Amor-
Feste uranokker, pt., *Wern.*;
erz, *Breit.*; hydro aluminous
hydro aluminate of lead;
uranpecherz, *Freies.*; pechuran
the, *Dufr.*; phosphor gummit,
; pitch blende, *Phillips*; uran-

GUMMITE—Continued.
gummi, *Breit.*; uranisches gummierz, *Breit.*; uranpecherz, *Wern.*

Gunnisonite. CaF_2 containing $SiO_2(Al_2O_3)$ CaO.

Gurhofian. See Dolomite.

Gurhofite. See Dolomite.

Gurholite. See Gyrolite.

Gurofiane. See Dolomite.

Gurolite. See Gyrolite.

Guyacanite. See Enargite.

GUYAQUILLITE, *John.* $C_{46}H_{32}O_6$. Amorphous.

Gymnite. See Deweylite.

Gyps. See Gypsum.

Gyps anhydre. See Anhydrite.

GYPSUM, *James.* $CaSO_4+2\,H_2O$. Monoclinic. Γυψις, *Herod., etc.*; Σελήτης Ἀφροδελήνον, *Diosc.*; aphroselenon; broad foliated gypsum, *Kirwan*; chaux sulfatée, *Fr.*; gesso, *Ital.*; gips, *Germ.*; gyps, *Wern.*; gypsum haloide, *Mohs*; lapis armenius, *Kirwan*; lapis specularis; lime sulphate; lumen de Scaiola; lunaire; marmor frugax, *Linn.*; miroir d'ane; niviforme; pierre à Jésus; pierre à plâtre; plaster of Paris; plaster stone; schaumgyps; sericolite; serikolite; spath séléniteux; sulphate of lime; terra calcarea acido vitriolo saturata, *Cronst.*; yeso, *Span.*

ALABASTER, *Cronst.*; alabâtre; alabâtre gypseux; alabaster agato; alabastra agato; alabastrum.

MONTMARTRITE, *Dela.*

SATIN SPAR: cat's eye; faser gyps; fibrous gypsum; plumose gypsum.

SELENITE, *James*: Chaux sulfaté crystallisée, *Haüy.*; frauenеis; glace du marie; glacies mariæ; gypsum sélénites; marienglas; marion glass; moudstein; moonstone; prismatoidal gypsum haloide; schwefelsaurekalk wasserhaltiger; selenites, *Wall.*

Gypsum haloide. See Gypsum.

Gypsum irregulaire. See Barite.

Gypsum lamellosum. See Barite.

Gypsum ponderosum. See Barite.

Gypsum selénités. See Gypsum.

Gypsum spatosum. See Barite.

Gyrasole. See Corundum.

GYROLITE, *Greg* and *Lettsom.* H_2Ca_2 $(SiO_3)_3+H_2O$. Gurholite, *Anderson*; gurolite, *Anderson*; gyrolith.

Gyrolith. See Gyrolite.

Haarcialite. See Scolecite.

Haarförmiges antimonglanz. See Jamesonite.

Haarförmiger brauneisenstein. See Göthite.

Haarförmiges grausspiessglanzerz. See Jamesonite.

Haarförmiges rothkupfererz. See Cuprite.

Haarkies. See Millerite and Marcasite.

Haarsalz. See Epsomite.

Habroneme malachite. See Pseudomalachite.

Hacked quartz. See Quartz.

Haddamite. See Microlite.

Hæmafibrite. See Aimafibrite.

Hæmachates. See Quartz.

Hæmatite. See Hematite and Limonite.

Hæmatitis. See Quartz.

Hæmatoconite. See Calcite.

Hafnefiordite. See Oligoclase.

Hafnefjordit. See Oligoclase.

Hagel. See Water.

Hagelkörner. See Water.

Hagemannite Near Thomsenolite.

Haidingerite. See Berthierite.

HAIDINGERITE, *Turner.* $HCaAsO_4+H_2O$. Orthorhombic. Diatomous gypsum haloid, *Haid.*; diprismatic euclas haloid, *Haid.*

Haimatolith. See Aimatolite.

Hair nickel. See Millerite.

Hair pyrites. See Millerite.

Hair salt. See Epsomite.

Hair stone. See Quartz.

Hair stone. See Rutile.

Halbazurblei. See Caledonite.

Halblasurblei. See Caledonit.

Halbopal. See Opal.

Halbvitriolblei. See Lanarkite.

HALITE. NaCl. Isometric. Bergsalz. *Germ.*; chloride of sodium; chlorure de sodium; common salt, *Dana*; gray salt; green salt; halites, *Glock.*; hexahedral rock salt, *Mohs*; knistersalz; kochsalz, *Germ.*; lake salt; martinsite, *Karst.*; muria fossilis pura; muriate of soda, *Phillips*; red salt; rock salt; sal gem, *Kirwan*; sal gemmae, *Wallerius*; salmare, *Beud.*; sal neutrum acidulaire, *Wallerius*; salt; salz, *Kenng.*; sea salt; see salz, *Wern.*; sel commun; sel en pierre; sel gem; sel gemme; sel gemmarum; sodium; soude muriatée, *H.*; steinsalz, *Germ.*; stone salt; white salt.

Halites. See Halite.

Hallite. See Aluminite.

HALLITE, *Leeds.* $H_{24}Mg_{12}(AlFe)_4Si_2O_{41}$. Hexagonal?

Halloylite. See Halloysite.

Halloysite. See Chloropal.

HALLOYSITE, *Berth.* $Al_2Si_2O_7+4H_2O$. Massive. Argile lithomarge, *Haüy*; galapectite, *Dufren.*; galapektit; garnierite; halloyite, *Berth.*; halloylite, *Berth.*; hverlera; lithomarge; melosark; montmilch; pseudo-steatite; rock marrow, *Jameson*; rock soap; savon du montagne, *Jameson*; steinmark, *Wern.*

BOLE: Argile ferrugineuse; argile ochreuse; bergseife, *Wern.*; bole; mountain soap; oropion, *Glock.*; red bole; siderobole; siderosbole, *Breit.*

LENZINITE, *Leonh.*: Argillaceous lenzinite, *Phillips*; lenzin, *John*; nertschinkillite; nertschinskite, *Razou.*; opaline lenzinite; severite, *Pell.*

MILANITE.

SMECTITE, *Salv.*: Collyrite, *Berth.*; glossecolith; glossecollite, *Shep.*; gummite, *Breit.*

Halloyte. See Halloysite.

Halochalzit. See Atacamite.

Halotrichet. See Alunogen.

Halotrichine. See Halotrichite.

Halotrichite. See Alunogen.

HALOTRICHITE, *Glock.* $FeAl_2(SO_4)_4+22H_2O$. Alotrichine, *Scacchi*; alun de plume, *Dufren.*; eisenalaun, *Germ.*; feather alum; federalaun von Freyenwalde, *Klapr.*; halotrichine, *Sesc.*; hversalt, *Forchh.*; iron alum, *Glock.*

ROCK BUTTER: Berg butter; beurre de montagne.

Halotrichum. See Epsomite.

Hamartite. See Bastnäsite.

Hammochrysos. See Mica group.

Hampshirite. See Aphrodite.

HANKSITE, *Hidden.* $4Na_2SO_4 \cdot Na_2CO_3$. Hexagonal.

HANNAYITE, *v. Rath.* $H_4(NH_4)_2Mg(PO_4)_3+8H_2O$. Triclinic.

Hard coal. See Mineral coal

Hard fahlunite. See Iolite

Hard lithomarge. See

See

ende. See

atite.

ianus. See

See Eding-

Al_2O_3, CuO,

obalt. See Ery-

Voltzite.

Cinnabar.

ore. See Cinna-

Marcasite.

ite and Chrysocolla.

Cuprite and Chrys-

See Sulphuretted hy-

arite.

Marcasite.

Magnetite.

Limonite.

Ilmeite.

Zippe. $FeAl_2O_4$. Isomet-

spinel.

Haid. $BeCaPO_4F$. Or-

Allogonit, *Breit.*; pris-

haloid, *Mohs.*

See Rhodonite.

te. See Columbite.

See Tetrahedrite.

RUNDITE, *Brezina.* Cu_3 $Ca(SO_4)_2+3\ H_2O$. Mon-

Urvölgyrite.

See Smithsonite.

LITE, *Levy.* $(NaK)_3Ca(Al_3)_4$ $0\ H_2O$. Monoclinic. Gmelin-

herschelite, *von Lang.*

See Seebachite.

See Hverlera.

ERGITE, *Kenng.* An anhy-

icate. Monoclinic. Sider-

ssenb.

n ears. See Chalcocite.

Froebel. Ag_2Te. Isometric.

elluré, *Necker*; bitelluret of

hom.; savodinskite, *Huot.*;

llur; telluré d'argent; tel-

er; tellursilber, *Rose.*

Hessonit. See Garnet.

Hetærolite, Moore. $ZnMn_2O_4$. Hetairite.

Hetairite. See Hetærolite.

Hetepozit. See Triphyllite.

Heterocline. See Braunite and Rhodonite.

HETEROGENITE, *Frenzel.* Co_6O_7+6 H_2O. Amorphous.

Heteroklin. See Braunite and Rhodonite.

Heteromerite. See Vesuvianite.

Heteromorphite. See Jamesonite.

Heteromorphite, Pisani. 7 PbS. 4 Sb_2S_3.

Heterosite. See Triphyllite.

Heterotomous felspar. See Albite.

Heterotyp. See Amphibole.

Heterozite. See Triphyllite.

Heubachite, Sandb. 3 (Co_2, Ni_2, Mn_2, Fe_2) $O_3+4\ H_2O$. Amorphous.

HEULANDITE, *Brooke.* $H_4CaAl_2(SiO_3)_6$ $+3H_2O$. Monoclinic. Beaumontite, *Levy*; blätterzeolith, *Wern.*; blättriger stilbit; blättriger zeolith, *Meyer*; cerinite, *How.*; euzeolith, *Breit.*; foliated zeolite, *Jameson*; hemiprismatic kouphone spar, *Mohs*; hemiprismatic zeolite; lincolnite, *Hitchcock*; stilbite; stilbite anamorphique, *H.*; zeolithe lamelleuse, *Brochant.*

Hexaedrisches eisenerz. See Iserite.

Hexagonal chlorite. See Prochlorite.

Hexagonal chlorite. See Ripidolite.

Hexagonal kouphone-spar. See Gmelinite.

Hexagonal palladium. See Allopalladium.

Hexagonite. See Amphibole.

Hexahedral arseniate. See Chalcophyllite.

Hexahedral cobaltpyrites. See Cobaltite.

Hexahedral copper-glance. See Stannite.

Hexahedral corneous silver. See Cerargyrite.

Hexahedral galena. See Galenite.

Hexahedral glance-blende. See Alabandite.

Hexahedral gold. See Gold.

Hexahedral iron-pyrites. See Pyrite.

Hexahedral kobaltkies. See Cobaltite.

Hexahedral kouphone-spar. See An

cite.

Hexahedral lead. See Lead.

Hexahedral lead-glance. See Ga

Helvetan, Simmler. An unplaced mica.

Helvin. See Helvite.

HELVITE. $(MnBeFe)_7Si_3O_{12}S$. Isometric. Achtarandit; ein Fossil w. Aehnlichk. m. d. Granat hat, aber nicht Granat zu seyn scheint *Mohs*; helvin, *Wern.*; tetraëdrischer Granat, *Mohs*; tetrahedral garnet.

Hematite. See Limonite and Turgite.

HEMATITE, *Brooke* and *Miller.* Fe_2O_3. Hexagonal. Αἱματίτης, *Theophr.*; amatita, *Petr.*; eisen oxyd, *Leonh.*; fer oxydé, *Berz.*; hämatit, *Haus.*; hämatites pt., *Plin.*; iron oxyd; magnesian iron ore; mine de fer; oxide of iron; peroxydé de fer; red oxide of iron; rhombohedral iron ore, *Mohs.*

CLAY IRONSTONE: Argillaceous hematite; argillaceous iron ore; clay iron ore; jaspery clay ironstone; jaspery iron ore; kabook of Ceylon; kieseleisenstein; lenticular clay iron ore; lenticular iron ore; oolithisches eisenerz; red clay ironstone; red ironstone.

ITABIRYTE: Eisen anatas, *Volger.*

MARTITE, *Breit.*; fer oligiste octaèdre, *H.*

RED HEMATITE, *Phillips*; blodsten, *Wall*; bloodstone; blutstein, *Haus.*; blutstein schuppiger; fer oxidé rouge; glaskopf, *Agric.*; hämatites ruber; hématite rouge; iron foam; iron froth; järnmalm tritura rubra; pierre sanguine; red iron froth, *James.*; red iron ore; red ironstone, *James.*; red oxide of iron; red scaly iron ore, *James.*; rothes eisenerz; rother eisenstein, *Wern.*; rother glaskopf, *Wern.*; sanguine.

RED OCHRE: Argile martial rouge, *de Born*; argile ochreous graphique, *H.*; craie rouge; crayon rouge, *Brochant*; iron ochre; ochreous iron ore; ochra pt., *Cronst.*; ochra rubra, *Wall*; raddle; red chalk; reddle, *Jameson*; red iron chalk, *James.*; red iron ochre; roethel; rother eisenrahm; ruddle; terres bolaires; terres d' Italie.

SPECULAR IRON, *Phillips*: Eisenglanz. eisenglimmer, *Wern.*; Elba iron ore; fer micacé; fer oligiste, *H.*; fer pyrocéte; fer speculaire, *Brochant*; galenae genus tertium omnis metalli; glanzeisenerz; iron glance, *James.*; iron mica, *Jameson*; micaceous iron ore; minera ferri specularis, *Wall*; oligist iron; micaceous oxide of iron; puletta of Elba; red iron glance; specular iron ore; specular oxide of iron; speglande eisenglimmer, *Cronst.*; speglande jernmalm, *Wall.*

Hematite, black. See Psilomelane.

Hematite, brown. See Limonite.

Hématite brune. See Limonite.

Hématite noire. See Psilomelane.

Hematite, red. See Hematite.

Hématite rouge. See Hematite.

Hematites ruber. See Hematite.

Hematoconite. See Calcite.

Hemichalcit. See Emplectite.

Hemimorphite. See Calamine.

Hemi-prismatic augite spar. See Amphibole.

Hemi-prismatic brythine salt. See Glauberite.

Hemi-prismatic chrysolite. See Chondrodite.

Hemi-prismatic dystome-malachite. See Pseudomalachite.

Hemi-prismatic euclas haloid. See Pharmacolite.

Hemi-prismatic fluor-haloid. See Wagnerite.

Hemi-prismatic gypsum-haloid. See Pharmacolite.

Hemi-prismatic habroneme-malachite. See Malachite.

Hemi-prismatic hal-baryte. See Diexite and Barytocalcite.

Hemi-prismatic kouphone-spar. See Heulandite and Stilbite.

Hemi-prismatic lead-baryte. See Crocoite.

Hemi-prismatic natron-salt. See Trona and Natron.

Hemi-prismatic olive-malachite. See Vauquelinite.

Hemi-prismatic ruby-blende. See Miargyrite and Pyrargyrite.

Hemi-prismatic schiller-spar. See Enstatite and Pyroxene.

Hemi-prismatic sulphur. See Realgar.

Hemi-prismatic titanium. See Titanite.

Hemi-prismatic titanium-ore. See Titanite.

Hemi-prismatic vitriol-
anterite.

Hemi-prismat-
ite

matischer amphibol. See bole.
matische rubin-blende. See rite.
matites. See Diastatite.
matites Wallerianus. See bole.
midal felspar. See Eding-
See Altaite.
, *Collins.* P_2O_5, Al_2O_3, CuO, c. Near Turquois.
rsenical cobalt. See Ery- (?).
lende. See Voltzite.
innabar. See Cinnabar.
mercurial ore. See Cinna-
yrites. See Marcasite.
See Cuprite and Chrysocolla.
z. See Cuprite and Chrys-
e luft. See Sulphuretted hy-
See Barite.
rit. See Marcasite.
. See Magnetite.
te. See Limonite.
See Hircite.
ITE, *Zippe.* $FeAl_2O_4$. Isometron-spinel.
ITE, *Haid.* $BeCaPO_4F$. Orthombic. Allogonit, *Breit.*; prisfluor haloid, *Mohs.*
te. See Rhodonite.
olite. See Columbite.
e. See Tetrahedrite.
GRUNDITE, *Brezina.* $Cu_3CuCa(SO_4)_2+3H_2O$. Mon-. Urvölgyrite.
See Smithsonite.
ELITE, *Levy.* $(NaK)_2Ca(Al_2)_2+10H_2O$. Monoclinic. Gmelin-; herschelite, *von Lang.*
te. See Scebachite.
a. See Hverlera.
BERGITE, *Kenng.* An anhysilicate. Monoclinic. Sider- *Hessenb.*
orn ears. See Chalcocite.
E, *Froebel.* Ag_2Te. Isometric. tellure, *Necker*; bitelluret of ; savodinskite, *Huot.*; telluré d'argent; telber, *Rose.*

Hessonit. See Garnet.
Hetærolite, Moore. $ZnMn_2O_4$. Hetairite.
Hetairite. See Hetærolite.
Hetepozit. See Triphyllite.
Heterocline. See Braunite and Rhodonite.
HETEROGENITE, *Frenzel.* $Co_2O_7+6H_2O$. Amorphous.
Heteroklin. See Braunite and Rhodonite.
Heteromerite. See Vesuvianite.
Heteromorphite. See Jamesonite.
Heteromorphite, Pisani. $7PbS.\ 4Sb_2S_3$.
Heterosite. See Triphyllite.
Heterotomous felspar. See Albite.
Heterotyp. See Amphibole.
Heterozite. See Triphyllite.
Heubachite, Sandb. $3(Co_2, Ni_2, Mn_6, Fe_2)O_3+4H_2O$. Amorphous.
HEULANDITE, *Brooke.* $H_4CaAl_2(SiO_3)_6+3H_2O$. Monoclinic. Beaumontite, *Levy*; blätterzeolith, *Wern.*; blättriger stilbit; blättriger zeolith, *Meyer*; cerinite, *How.*; enzeolith, *Breit.*; foliated zeolite, *Jameson*; hemiprismatic kouphone spar, *Mohs*; hemiprismatic zeolite; lincolnite, *Hitchcock*; stilbite; stilbite anamorphique, *H.*; zeolithe lamelleuse, *Brochant.*
Hexaedrisches eisenerz. See Iserite.
Hexagonal chlorite. See Prochlorite.
Hexagonal chlorite. See Ripidolite.
Hexagonal kouphone-spar. See Gmelinite.
Hexagonal palladium. See Allopalladium.
Hexagonite. See Amphibole.
Hexahedral arseniate. See Chalcophyllite.
Hexahedral cobaltpyrites. See Cobaltite.
Hexahedral copper-glance. See Stannite.
Hexahedral corneous silver. See Cerargyrite.
Hexahedral galena. See Galenite.
Hexahedral glance-blende. See Alabandite.
Hexahedral gold. See Gold.
Hexahedral iron-pyrites. See Pyrite.
Hexahedral kobaltkies. See Cobaltite.
Hexahedral kouphone-spar. See Analcite.
Hexahedral lead. See Lead.
Hexahedral lead-glance. See Galenite.

Hexahedral lirocconite. See Pharmacosiderite.
Hexahedral lirocon-malachite. See Pharmacosiderite.
Hexahedral olivenite. See Pharmacosiderite.
Hexahedral pearl-kerate. See Cerargyrite.
Hexahedral platina. See Platinum.
Hexahedral rock-salt. See Halite.
Hexahedral silver. See Silver.
Hexahedral silver-glance. See Argentite.
Hexahedral tellurium. See Altaite.
Hexymuriate of copper. See Atacamite.
Hialith. See Opal.
Hibbertite, Heddle. Near Predazzite.
Hiddenite. See Spodumene.
Hielmite. Cb, Ta, Sn, W, Fe, Mn, etc. Crystalline. Hjelmite, *Nord.*
HIERATITE. $2KF.SiF_4$. Isometric.
Highgate resin. See Copalite.
Hillängsite. Near Silfbergite.
Himbeerspath. See Rhodochrosite.
Himmelblau fossil von Steiermark. See Lazulite.
Hircine. See Hircite.
Hircite. A hydrocarbon. Amorphous; hercine; hircine, *Piddington.*
Hirseneisenstein. See Siderite.
HISINGERITE, *Berz.* $(Fe, Mg, H_2)_6 Fe'''_4(SiO_6)_3+4H_2O$. Amorphous. Degeröit, *Holmb.*; mangan hisingerit; scotiolite; skotiolite, *Arppe*; skotiolith.
MELANOLITE, *Wurtz.* Melanolith.
Hislopite. See Calcite and Glauconite.
Hitchcockite. See Plumbogummite.
Hjelmit. See Hielmite.
Hoevelit. See Sylvite.
HOERNESITE. $Mg_3As_2O_8+3H_2O$. Monoclinic.
HOFMANNITE, *Bechi.* $C_{20}H_{36}O$. Crystalline.
Högauite. See Natrolite.
Hog tooth spar. See Calcite.
Hohlspath. See Andalusite.
Hollow-spar. See Andalusite.
Holmesite. See Seybertite.
Holmite. See Seybertite.
Holzasbest. See Amphibole.
Holz, bituminöses. See Mineral Coal.
Holzkohle, mineralische. See Mineral Coal.
Holzkupfererz. See Olivinite.
Holzopal. See Opal.
Holzstein. See Quartz.
Holzzinn. See Cassiterite.
Holzzinnerz. See Cassiterite.
Homichlin. See Barnhardtite.
HOMILITE, *Paijkull.* $FeCa_2B_2Si_2O_{10}$. Monoclinic.
Homocline. See Barnhardtite.
Honestone. See Quartz.
Honey-stone. See Mellite.
Honey-yellow quartz. See Quartz.
Honigstein. See Mellite.
Honigsteinsäure+alaunerde+wasser. See Mellite.
Honigsteinsaurer eisen. See Humboldtine.
Hoo-cannel. See Mineral coal.
HOPEITE, *Brewst.* $Zn_3P_2O_8+4H_2O$. Orthorhombic. Phosphate of zinc; prismatic monoclase haloid, *Mohs*; prismatoidischer zinkphyllit, *Breit.*; zink phosphat; zink phyllit, *Breit.*
HORBACHITE, *Knop.* $4Fe_2S_3.Ni_2S_3$. Crystalline.
Hornbärg. See Amphibole.
Hornblei. See Phosgenite.
Hornblende. See Amphibole.
Hornblende, basaltic. See Amphibole.
Hornblende, fibrous. See Amphibole.
Horn coal. See Mineral coal.
Horncobalt. See Wad and Erythrite.
Hornerz. See Calomel.
Hornerz. See Cerargyrite.
Hornfarbs-silber. See Cerargyrite.
Hornfels. See Quartz.
Horn lead. See Phosgenite.
Hornmangan. See Rhodonite.
Horn ore. See Cerargyrite.
Horn quicksilver. See Calomel.
Hornsilber. See Cerargyrite.
Horn-silfver. See Cerargyrite.
Horn silver. See Cerargyrite.
Hornstein. See Quartz.
Hornstone. See Quartz.
Hornstone, fusible. See Orthoclase.
Hornstone, infusible. See Quartz.
Horse-flesh ore. See Bornite.
Hortonite. See Talc.
HORTONOLITE, *Brush.* $(Fe, Mg, Mn)_2SiO_4$. Orthorhombic.
Houghite. See Hydrotalcite.
Houille. See Mineral coal.
Houille papyracée. See Dysodile.
Hövelit. See Sylvite.
Hövellit. See Sylvite.

, *Gladstone.* $H_2CaC_2O_6+2\,H_2O$.
ina carbonate; native carbonate
umina and lime.
TE, *Dana.* $H_8Ca_2B_6SiO_{14}$. Silico-
alcite, *How.*
ite. NaCl, containing AgCl.
tric.
OLITE, *Dana.* 2 PbS. 3 ZnS.
a blendosa, *Domeyko*; sulphide
d and zinc, *Forbes.*
RITE, *Riotte.* $MnWO_4$. Ortho-
bic.
te. See Pyroxene.
vitriol. See Sulphatite.
inerale commune. See Naph-
e naphte. See Naphtha.
le pétrole. See Naphtha.
Hardmann. Near Delessite.
ive.
de chaux. See Pigotite.
dtilite. See Melilite.
dtilith. See Melilite.
dtilith melilith. See Melilite.
OLDTINE, *de Rivero.* 2 FeC_2O_4
H_2O. Eisen resin; faser resin;
xalaté; honigsteinsaures eisen,
.; humboldtite, *Leonh.*; iron
ite; mellate of iron; oxalate de
oxalate of iron; oxalite.
dtite. See Datolite.
dtite. See Humboldtine.
, *Ekman.* A hydrocarbon.
See Chondrodite.
E, *Des Cloiz.* $Mg_5Si_2O_9$. Ortho-
ibic.
See Mineral coal.
te. See Cimolite.
LITE, *Wurs.* Ag_3As. Macfar-
e.
ULITE, *Alluaud.* $H_4(MnFe)_5$
$)_4+4\,H_2O$. Monoclinic.
e. See Anorthite and Fahlunite.
ENITE, *Dana.* $Mg_5Fe''_2B_{16}O_{30}$.
nstassfurtit, *Huys.*; iron bora-
stassfurtit, *Bischof.*
, *Forch.* Near Halloysite; Her-
ca.
t. See Halotrichite.
s. See Arsenopyrite.
tril. See Goslarite.
te. See Vesuvianite.
te. See Zircon.
te blanche. See Harmotome.
te du Vésuve. See Vesuvianite.

Hyacinte volcanique. See Vesuvianite
Hyacinth. See Corundum, Garnet, Zircon, and Vesuvianite.
Hyacinth blanche de la Somma. See Meionite.
Hyacinth de Ceylon. See Garnet.
Hyacinth de Vésuve. See Vesuvianite.
Hyacinthe blanche cruciforme. See Harmotome.
Hyacinthe de Compostelle. See Quartz.
Hyacinthe la bella. See Zircon and Garnet.
Hyacinth garnet. See Garnet.
Hyacinthine. See Meionite.
Hyacinthine. See Vesuvianite.
Hyacinthos. See Corundum.
Hyacinthozontes. See Beryl.
Hyacinthus dictus octodecahedricus. See Vesuvianite.
Hyalite. See Opal.
Hyalith. See Opal.
Hyalomelan, Haus. Near Tachylyte.
HYALOPHANE, *von Walters.* $(Ba, K_2)Al_2(SiO_3)_4$. Monoclinic. Barytapotash feldspar; baryt-plagioclase, *Des Cloiz.*
Hyalosiderite. See Chrysolite.
Hyalotekite, Nordensk. PbO, BaO, CaO, SiO_2, etc. Crystalline.
Hyazinth. See Garnet and Zircon.
Hyblite. See Palagonite.
Hydrargillite. See Turquois, Gibbsite, and Wavellite.
Hydrargylite. See Gibbsite, Turquois, and Wavellite.
Hydrargyrite, Bertrand. HgO.
Hydrargyros. See Mercury.
Hydrated calcium aluminic phosphate. See Tavistokite.
Hydrated deutoxide of manganese. See Manganite.
Hydrate de silice. See Opal.
Hydrated iolite. See Fahlunite.
Hydrate of iron. See Limonite, Turgite, etc.
Hydraulic limestone. See Calcite.
Hydro-aluminous lead. See Plumbogummite.
Hydro-apatite, Damour. $3\,Ca_3P_2O_8$. CaF_2+H_2O.
Hydrobiotite. See Biotite.
HYDROBORACITE, *Hess.* $CaMgB_6O_{11}+6\,H_2O$. Hydrous borate of lime and magnesia.
Hydroborocalcit. See Ulexite.

Hydrobucholzite. See Fibrolite.

Hydrocalcite, Krants. Hydrokonit; hydrous carbonate of lime.

Hydro carbonate de fer. See Siderite.

Hydro-carbonate of magnesia. See Hydromagnesite.

Hydrocastorite. See Petalite.

Hydrocerit. See Lanthanit.

Hydrocerussite, Nordensk. $2\,PbCO_3+H_2O$. Crystalline.

Hydrochlorate de chaux. See Chlorocalcite.

Hydrochlore. See Pyrochlore.

HYDROCHLORIC ACID. HCl. Acide chlorhydrique; acide hydrochlorique; acide marine; acide muriatique; æriform muriatic acid; esprit du sel; gasförmige salzsäure, *Mohs*; muriatic acid; salzsäure, *Haus.*; salzsaures gas.

Hydrocinit. See Zincite.

HYDROCONITE, *Pelouze.* $CaCO_3+5\,H_2O$. Hexagonal.

HYDROCUPRITE, *Genth.* $Cu_3(OH)_2$.

HYDROCYANITE. *Scacchi.* $CuSO_4$. Orthorhombic. Idrociano.

HYDRODOLOMITE, *Ramm.* $3\,(CaMg)CO_3+H_2O$. Massive. Dolomite sinter, *von Kob.*; hydromagnocalcit, *Ramm.*; hydromanganocalcit, *Hartm.*; hydronickel magnesite, *Shep.*; hydrokalk magnesit, *Hausm.*; pennite, *Herm.*

Hydrofluocerite. See Fluocerine.

HYDROFLUORITE, *Scacchi.* HFl.

Hydrofranklinite, Roepper. Zn, Mn, Fe, H_2O. Isometric.

HYDROGEN. H. Brennbare luft; inflammable luft; wasserstoff-gas.

Hydrogen, carburetted. See Marsh gas.

Hydrogène carboné. See Marsh gas.

Hydrogène phosphoré. See Phosphuretted hydrogen.

Hydrogène semi carboné. See Marsh gas.

Hydrogène sulfuré. See Sulphuretted hydrogen.

Hydrogen, sulphuretted. See Sulphuretted hydrogen.

HYDROGIOBERTITE. $2\,MgCO_3.\,3\,H_2O$.

Hydrohæmatite. See Turgite.

Hydrohalite, Adam. A hydrous chloride of sodium.

Hydroilmenite. See Menaccanite.

Hydrokastorit. See Petalite.

Hydrokonit. See Hydrocalcite.

Hydrolanthanit. See Lanthanite.

Hydrolanthite. See Lanthanite.

Hydrolite. See Gmelinite.

Hydrolithe. See Gmelinite.

Hydro magnésie. See Hydromagnesite.

HYDROMAGNESITE, *Wackt.* $Mg_4(OH)_2(CO_3)_3+3\,H_2O$. Monoclinic. Hydrocarbonate of magnesia, *Silliman*; hydromagnésie; lancasterite, *Silliman*; magnesia alba, *Pharm.*; magnesia hydrocarbonate; magnésie hydrocarbonatée.

Hydromagnocalcit. See Hydrodolomite.

Hydromanganocalcite. See Hydrodolomite.

Hydronephelite. Altered Sodalite.

Hydroniccite, Shep. Doubtful hydrated nickel oxide.

Hydronickelmagnesite. See Hydrodolomite.

Hydrophane. See Opal.

Hydrophane cuivreux. See Chrysocolla.

Hydrophilite. See Chlorocalcite.

HYDROPHITE, *Svanberg.* $(FeMg)_3Si_2O_7+3\,H_2O$. Massive. Eisengymnit; jenkinsite, *Shep.*

Hydropite. See Rhodonite.

Hydropyrit. See Marcasite.

Hydrorhodonite, Engeström. (Mn, Mg, Ca)SiO_3+H_2O. Crystalline.

Hydrorutile, Damour. TiO_2 and water.

Hydrosilicate of manganese. See Klipsteinite.

Hydrosilicite. See Chlorophaeite.

Hydrosilicite noir de Chili. See Chrysocolla.

Hydrosteatite. See Talc.

Hydrosulphate d'alumine. See Alum-inite.

Hydrotachylyt. See Tachylyte.

Hydrotalc. See Penninite.

HYDROTALCITE. $Al_2(OH)_6$. $6\,Mg(OH)_2+6\,H_2O$. Hexagonal. Hydrotalkit, *Hochs.*; houghite, *Shep.*; völknerite, *Herm.*; wölknerite.

Hydrotalkit. See Hydrotalcite.

Hydrotephroite, Igelström. $3\,(Mn, Mg)SiO_4+2\,H_2O$. Black silicate of manganese, *Klapr.*

Hydrotite. See Gmelinite.

Hydrotitanite. See Perofskite.

Hydro-trisulfate d'alumine. See Alunogen

CITE. $ZnCO_3$. $2Zn(OH)_2$.
s. Calamine, *Smithson*; lamine, *Beud.*; hydrocarzinc; hydrozinkit, *Kenng.*; *Elderhorst*; zinc bloom, zinkblüthe, *Karst.*; zinc ; zinconine; zinconise,

See Hydrozincite.
minate of lead. See Plume.
hopyllite. See Amphibole.
imonic acid. See Volger-

tite. See Hydro-apatite.
ite. See Pyroxene.
asic arseniate of nickel lt. See Forbesite.
ate of lime. See Bechilite.
ate of lime and magnesia. boracite.
bonate of lime. See Hy-
.
hosphate of alumina and . See Lazulite.
te. See Fahlunite.
scovite. See Margarodite.
de of iron. See Limonite.
osphate of copper. See lachite.
phate of lime and alumina a, Damour. Cabocle.
ites. See Marcasite.
atite. See Saponite.
Laspeyeres. (K, Na, Mg, Ca, $Si_9O_{27}+5\ H_2O$.
See Miargyrite.
blende. See Miargyrite.
ee Hypersthene.
. See Labradorite.
. See Pyroxene.
IENE, *H.* $(Mg, Fe)SiO_3$.
nbic. Diallage métalloïde, mous schiller spar, *Mohs*; ; Labrador hornblende, Labradorische hornblende, abrador schiller spar; metallage; paulit, *Wern.*; prisschiller spar, *Mohs*.
Schüler. Quartz with bis- te ($Bi_2Fe_4Si_4O_{17}$). Crystal- timony hypochlorite, *Fren-* nth hypochlorite, *Frenzel*; rrite; green iron earth, green martial earth, *Kir-*

Hypochlorite—Continued,
wan; grüne eisenerde, *Mohs*; sogenannte grüneisenerde von Schneeberg, *Schüler*.
Hypoleimme. See Pseudomalachite.
Hyposclerite. See Albite.
Hyposiderite. See Limonite.
Hyposklerit. See Albite.
Hypostatit. See Menaccanite.
HYPOSTILBITE, *Beud.* $(Ca, Na_2)_2$ $Al_4Si_9O_{26}+12\ H_2O$. Desmin, puflerit, *Bukeisen*; red stilbite.
Hypothetical phosphate. See Richmondite.
Hypotyphite. See Arsenic.
Hypoxanthite, Rowney. Mixture SiO_2, Al_2O_3, Fe_2O_3, CaO, H_2O. Terra di Sienna.
Hystatisches eisenerz. See Menaccanite.
Hystatique, Breit. $CaCO_3$.
Hystatite. See Menaccanite.
Iberite. See Pinite.
Ice. See Water.
Iceland agate. See Orthoclase.
Iceland spar. See Calcite.
Ice spar. See Orthoclase and Anorthite.
Ichthyophthalme. See Apophyllite.
Ichthyophthalmite. See Apophyllite.
Idocrase. See Vesuvianite.
Idocrase cuprifére. See Vesuvianite.
Idokras. See Vesuvianite.
Idrialine. See Idrialite.
Idrialine cinnabar. See Cinnabar.
IDRIALITE, *Schrötter.* C_3H_2. Crystalline. Branderz; idrialine, *Dumas*; inflammable cinnabar; quecksilberbranderz.
Idrocastorite. See Petalite.
Idrociano. See Hydrocyanite.
Igelströmite. See Knebelite.
Igléiasite. See Cerussite.
Iglite. See Aragonite.
Igloite. See Aragonite.
Ignis fatuus. See Marsh Gas.
IHLEITE, *Schrauf.* $Fe_2(SO_4)_3+12H_2O$. Amorphous.
Ildefonsite. See Tantalite.
ILESITE, *Wuensch.* $(Mn, Fe, Zn)SO_4+$ $4\ H_2O$. Crystalline.
Illuderite. See Zoisite.
Ilmenite. See Menaccanite and Mengite.
Ilmenorutile. See Rutile.
ILSEMANNITE, *Höfer.* MoO_4. $4\ MoO_3$. Cryptocrystalline.

…SiO… …ron ore, …H. fer …lievr- …enite,

…orundum.

…az.

…SiO₄)₃.

…rmaline.

…maline.

…ovellite.

…rmaline.

…cerium ore. See Cerite.

…ated … See Talc.

…flammable cinnabar. See Idrialite.

…flammable … See Hydrogen.

…earth. See Opal.

…

…argyrite. See Iodyrite.

…argyrite. See Iodyrite.

…de. See …

…dic mercury. See Coccinite.

…dic quicksilver. See Coccinite.

…dic silver. See Iodyrite.

… *magnesium.* MgI. …

…magnesium.

… *…atium.* NaI. …

Ioguneit. See Scorodite.

IOLITE. *Phillips.* (Mg Fe)$_2$Al$_4$Si$_5$O$_{18}$. Orthorhombic. **Awialite**: cordierite, *Dana* … *Cordier*: fahlunite … hard fahlunite. *Berz.*: iolite … water sapphire … *Wern.*: persb… prismatic quartz, *Jam*… *Phillips*: saphir … sapphire … steinheilite; wasserstein …

Iolite, hydrous. See Fahlunite, Pinite …

Iolite. See …

Iolite, hydrous. See Fahlunite, Pinite, and …

Ionit … carbon, from Amador County …

Iridescent copper pyrites. See Bornite.

Iridescent quartz. See Quartz.

Iridium. See Iridosmine.

Iridium osmine. See Iridosmine.

Iridosmine, rhodiferous. See Iridosmine.

Iridosmine, rutheniferous. See Iridosmine.

IRIDOSMINE. *Necker.* IrOs. Hexagonal. … of iridium a… osmine, *H.* … iridos…

…

…Isom…

…osmium.

IRON. … Meteor … …eisen: … gediegen eisen … meteoreisen, *Haus.* … native iron; octahe… *James.* partschite, *Shep.*: … tellureisen; siderographite.

See Halotrichite.
i garnet. See Garnet.
ole. See Amphibole.
nial sulfuré. See Berthier-

See Triplite.
e. See Pharmacosiderite.
:al. See Leucopyrite and
.
e. See Huyssenite.
See Lagonite.
ite. See Siderite.
t of. See Graphite.
e of. See Molysite.
ite. See Fayalite.
ate. See Columbite and
.
is arsenate. See Scorodite.
ate. See Pitticite.
lue. See Vivianite.
ee Quartz.
See Hematite.
See Hematite.
See Garnet.
See Hematite.
s oxides. See Limonite,
lerite, Turgite, Goethite.
roxene. See Pyroxene.
la amphibole. See Amphi-

la spinel. See Spinel.
ic. See Magnetite.
iese amphibole. See Am-

e *chrysolite, Erdmann.* Fe_6
$g)(SiO_4)_4$.
iese tungstate. See Wol-

ic. See Iron.
See Hematite.
e. See Natrolite.
See Hematite and Limonite.
See Hematite.
illaceous. See Hematite
nite.
enicated. See Pharmaco-

omous. See Menaccanite.
. See Goethite, Limonite,
nd Xanthosiderite.
vn. See Goethite and Lim-

areous. See Siderite.
. See Hematite, Limonite,
te.

Iron ore, green. See Dufrenite.
Iron ore, jaspery. See Hematite.
Iron ore, lenticular. See Hematite.
Iron ore, magnetic. See Magnetite.
Iron ore, micaceous. See Hematite.
Iron ore, ochreous. See Hematite, Goethite, and Limonite.
Iron ore, octahedral. See Magnetite.
Iron ore, pitchy. See Pitticite.
Iron ore, red. See Hematite.
Iron ore, sparry. See Siderite.
Iron ore, specular. See Hematite.
Iron ore, titaniferous. See Menaccanite.
Iron oxalate. See Humboldtine.
Iron oxide. See Hematite.
Iron, oxydulated. See Magnetite.
Iron phosphate. See Vivianite, Dufrenite, and Cacoxenite.
Iron platinum. See Platinum.
Iron sand. See Iserite, Magnetite, and Menaccanite.
Iron pyrites. See Pyrite and Marcasite.
Iron pyrites, magnetic. See Pyrrhotite and Troilite.
Iron pyrites, white. See Marcasite.
Iron rutile. See Goethite.
Iron-shot copper, green. See Chrysocolla.
Iron silicate. See Fayalite and Chamoisite.
Iron sinter. See Pitticite and Scorodite.
Iron spar. See Siderite.
Iron spinel. See Hercynite.
Iron stone, blue. See Vivianite.
Iron stone, brown. See Limonite.
Iron stone, clay. See Hematite, Goethite, and Siderite.
Iron sulphate. See Melanterite.
Iron sulphide. See Troilite, Pyrrhotite, Pyrite, and Marcasite.
Iron sulphuret. See Troilite, Pyrrhotite, Pyrite, and Marcasite.
Iron tantalate. See Tantalite.
Iron, titaniferous. See Menaccanite.
Iron tungstate. See Wolframite.
Iron vitriol. See Melanterite.
Isabellite. See Amphibole.
Ischellite. See Polyhalite.
Iserine. See Iserite.
Iserite. See Rutile.
ISERITE, *Dana.* $(FeTi)_2O_3$. Isometric. Fer oxydulé titanifère, *H.*; hexahedrisches eisenerz, *Mohs*; iron sand; iserine, *Wern.*; magnetic iron sand;

ISERITE—Continued.
oktaëdrisches titaneisenoxyd, *Wern.*; titaneisen, *Wern.*; titaneisenstein, *Haus.*; titaniferous iron; titaniferous iron sand, *Breit.*; titanmagneteisen; slaglike magnetic iron.

Isinglass. See Mica.

ISOCLASITE, *Sandb.* $Ca_4(OH)_2(PO_4)_2 + 4\ H_2O$. Monoclinic. Isoklas.

Isoklas. See Isoclasite.

Isometric cobalt pyrites. See Linnæite.

Isophane. See Franklinite.

ISOPYRE, *Turner.* $Ca(Al_2, Fe_2)Si_3O_{10}$.

Ispadran. See Chalcopyrite.

Itabiryte. See Hematite.

Itacolumite. See Quartz.

Italian chrysolite. See Vesuvianite.

Ittnerite. See Hauynite.

Ivaarite. See Schorlomite.

IVIGTITE, *Rand.* $(Na_2, K_2)(Al_2, Fe_2)_2 Si_4O_{15} + H_2O$.

Iwaarite. See Schorlomite.

Ixiolite. See Tantalite.

Ixiolith. See Tantalite.

Ixionolith. See Tantalite.

Ixolyte, Haid.; near Hartite. Amorphous.

Jacinta la bella. See Garnet and Zircon.

Jacksonite. See Prehnite.

JACOBSITE, *Damour.* $X Mn_3O_4$. $Y Fe_3 O_4$. $Z MnFe_2O_4$. Isometric.

Jade. See Zoisite, Jadeite, and Amphibole.

Jade asciens. See Amphibole.

Jade axinien, See Amphibole.

Jade de la Chine. See Jadeite and Amphibole.

Jade de Saussure. See Zoisite.

Jade néphrétique. See Amphibole and Jadeite.

Jade oriental. See Amphibole and Jadeite.

Jade tenace. See Zoisite.

JADEITE, *Damour.* $Na_4(Fe, Ca, Mg) Al_4(SiO_3)_9$. Massive. Axe stone; beilstein; ceraunite; feitsui; jade, *H.*; jade de la Chine, *H.*; jade néphrétique, *H.*; jade oriental; nephrite pt., *Jameson*; pierre de hache; pierre de iu, *China*; pierre de la circoncision; pocuamu; tanginwaite; tangiwai; uncleavable adiaphane spar, *Mohs*; uncleavable nephrite spar, *Haid.*; you stone, *China*; yu, *China.*

Jaïet. See Mineral coal.

Jaipurite, Mallet. **CoS. (Now said by Mallet to have no existence.)** Grankobalterz, *Germ.*; jeypoorite; kobaltkies pt.; kobaltsulphuret pt.; schwefel kobalt pt.; sulphuret of cobalt, *Middleton*; syepoorite, *Nicoll.*

Jais. See Mineral coal.

Jalpaite, Breit. $3 Ag_2S + Cu_2S$.

JAMESONITE, *Haid.* $2 PbS . Sb_2S_3$. Orthorhombic. Antimoine sulfuré cuprifère; axotomer antimon-glanz, *Mohs*; axotomous antimony-glance, *James.*; bleiantimonite; bleischimmer, *Pfaff*; gray antimony pt., *James.*; Pfaffite, *Huot.*

FEATHER ORE: Antimoine sulfuré aciculaire; antimoine sulfuré capillaire pt., *H.*; antimonialisk federerz pt., *Wall*; federerz, *Germ.*; haarformiges antimonglanz, *Mohs*; haarformiges grauspeissglanzerz pt., *Karst.*; heteromorphite; mine d'antimoine en plumes, *Fr.*; minera antimonii plumosa pt., *Wall*; plumites, *Glock.*; plumose antimonial ore pt.; plumose antimony; plumose ore, *Haid.*; plumosit, *Haid.*; prismatoidal copper glance; wolfsbergite. *Huot.*

TINDER ORE: Bergzunderer; mine d'Amadou; pierre d'Amadou: zundererz, *Lehmann.*

Janolite. See Axinite.

Jargionite. See Galenite.

Jargon. See Zircon.

Jargon de Ceylon. See Zircon.

Jargon de diamant. See Zircon.

Jargoon. See Zircon.

Järn med kalkjord förenadt. See Siderite.

JAROSITE, *Breit.* $K_2Fe'''_6(SO_4)_4 + 3\ H_2O$. Hexagonal. Eisenoxyd, schwefelsaures; gelbeisenerz, *Ramm.*; misy, *Haid.*; potash copperas; soda copperas; vitriol gelb, *Haus.*

COPPERASINE, *Shep.*

ERUSIBITE, *Shep.*

LEUCANTERITE, *Shep.*

MORONOLITE, *Shep.*

Jaspachates. See Quartz.

Jaspe. See Quartz.

Jasper. See Quartz.

Jasper, striped. See Quartz.

Jaspe rubané. See Quartz.

Jaspery clay iron. See Hematite.

r iron ore. See Hematite.
See Quartz.
colore cœruleo cuprifer. See
ia Lazuli.
. See Tachylyte.
al. See Opal.
NGITE, *Zeph.* $C_{26}H_{40}O_3$. Amor-
us.
e Mineral coal.
See Mineral coal.
ee Mineral coal.
RISITE, *Brush.* (Fe, Mg, Ca)$_4$
$Fe'''_2)_2(SiO_4)_5+5\ H_2O$. Ortho-
nbic. Vermiculite (?), *Brush.*
nite. See Pyroxene.
offite. See Vesuvianite.
owite. See Vesuvianite.
e. See Garnet.
e. See Garnet.
e. See Garnet.
See Ilvaite.
ite. See Hydrophite.
te, *Dana.* An amorphous SiO_2 of
2.6.
iéwite. See Jeremejeffite.
MEJEFFITE. $(Al_2Fe_2)(BO_3)_2$.
agonal. Jéréméiéwite, *Damour.*
h-manganoxidulik hornblende.
Amphibole.
nd. See Magnetite.
See Gypsum.
e Mineral Coal.
offite. See Vesuvianite.
nowite. See Vesuvianite.
pitch. See Asphaltum.
rite. See Jaipurite.
yrit. See Iodyrite.
. See Schwartzembergite.
See Iodyrite.
kur. See Coccinite.
cksilber. See Coccinite.
er. See Iodyrite.
ite. See Scorodite.
ite, *Haid.* $(U''_3, U'''_2)_8Cu_3(SO_6)_2$
$2\ H_2O$. Monoclinic. Sulfate verte
rane, *Bend.*; sulphate of uranium;
nium sulphate; uranium vitriol;
n sous sulfaté; uran sulfaté; uran
riol.
. See Turquois.
onite. See Galenite.
n. See Clay.
See Iolite.
e. See Jollyte.
TE, *von Kob.* $R''_6Al_6(SiO_4)_9+12$
. Amorphous. Jollylite.

JORDANITE, *vom Rath.* 4 PbS. As_2S_3. Orthorhombic.
Jordblandadt. See Thermonatrite.
JOSËITE, *Kenng.* Bi(Te, Se, S). Hexagonal. Bismuthic tellurium; bismuth tellurifère; bornine, *Dufr.*; tellure bismuthifère du Brésil, *Dufr.*; telluric bismuth; tellurure de bismuth, *Damour*; tellurwismuth.
Jossaite, Breit. $PbCrO_4$. ZnO. Orthorhombic.
Judenpech. See Asphaltum.
JULIANITE, *Websky.* 3 Cu_2S. As_2S_3. See Isometric.
Junckérite. See Siderite.
Jupiter. See Tin.
Jurinite. See Brookite.
Kabook of Ceylon. See Hematite.
Kaersutite. 5 (Fe, Ca, Mg)(Si, Ti, Sn)$_2$ O_3. Al_2O_3.
Kainit. See Picromerite.
KAINOSITE, *Nordensk.* $Ca_2(Y, Er)_2$ $(SiO_3)_4CO_3+2\ H_2O$.
Kakochlor. See Wad.
Kakoxene. See Cacoxenite.
Kalait. See Turquois.
Kalamit. See Amphibole.
Kalchstein. See Calcite.
Kalialaun. See Kalinite.
Kalicine, Pisani. $2\ K_2CO_3+H_2O$.
Kalifeldspath. See Orthoclase.
Kaliglimmer. See Muscovite.
Kaliharmotom. See Phillipsite.
Kalinischer Alum. See Kalinite.
Kalinischer Alumsulphat. See Kalinite.
KALINITE, *Dana.* $K_2Al_2(SO_4)_4+24\ H_2$ O. Isometric. Alaun; alaunsalz; alum, *Nicol*; alum salt; alumine sulfatée alcaline, *H.*; alun; kalialaun, *Germ.*; kalinischer alum, *Germ.*; kalinischer alumsulphat, *Germ.*; native alum; octahedral alum salt, *Mohs*; potash alum; sulphate of alumina and potash.
KALIOPHILITE, *Mierisch.* $K_2Al_2(Si$ $O_4)_2$.
Kaliphite. See Limonite.
Kaliptolite. See Zircon.
Kalisalpeter. See Nitre.
Kalisalzsaures. See Sylvite.
Kalischwefelsaures. See Aphthitalite.
Kalisulphat. See Aphthitalite.
Kalk. See Calcite.
Kalkalabaster. See Calcite.

Kalk, faser. See Calcite.
Kalkbaryt. See Barite.
Kalkfeldspath. See Anorthite.
Kalkglimmer. See Margarite.
Kalkgranat. See Garnet.
Kalkharmotome. See Phillipsite.
Kalklabrador. See Ersbyite.
Kalkmagnesite. See Hydrodolomite.
Kalkmalachit. See Lime malachite.
Kalkmesotyp. See Scolecite.
Kalknatronfeldspath. See Oligoclase and Labradorite.
Kalkoligoklas. See Oligoclase.
Kalkolivin. See Monticellite.
Kalkoxalsaures. See Whewellite.
Kalksaltpeter. See Nitrocalcite.
Kalksilicat, from Ædelfors. See Edelforsite.
Kalktalkspath. See Dolomite.
Kalksinter. See Calcite.
Kalkspat. See Calcite.
Kalkspath. See Calcite.
Kalkstein. See Calcite.
Kalkstein, faseriger. See Calcite.
Kalkstein, körniger. See Calcite.
Kalkstein, schaliger. See Calcite.
Kalktrisilicat. See Edelforsite.
Kalktuff. See Calcite.
Kalkuranit. See Autunite.
KALKVOLBORTHITE. $(Cu, Ca)_2(OH)VO_4$. Hexagonal. Lime vanadate; vanadate of lime and copper.
Kalkwavellit. See Lime Wavellite.
Kallait. See Turquois.
Kallochrom. See Crocoite.
Kalomel. See Calomel.
Kalophonit. See Garnet.
Kaluszite. See Syngenite.
Kalzedon. See Quartz.
Kamacite. See Iron.
Kämmererite. See Penninite.
Kammkies. See Marcasite.
Kampherharz. See Euosmite.
Kampylite. See Mimetite.
Kand. See Fluorite.
Kaneelstein. See Garnet.
KANEITE, *Haid.* MnAs. Amorphous. Arsenical manganese; arsenide of manganese; arsenikmangan; arseniuret of manganese, *Kane*; arsen mangan.
Kanelstein. See Garnet.
Kännelkohle. See Mineral coal.
Kaolin. See Kaolinite.
KAOLINITE, *Johnson.* $H_4Al_2Si_2O_9$. Orthorhombic. Argiles à porcelaine, *Fr.*; argiles chimiques; argiles hydratées; argile smectique, *H.*; aster, *Plin.*; collyrium, *Plin.*; earthy talc; erdiger talk, *Hofm.*; feldspath argilliforme, *Haüy*; feldspath terreux; fuller's earth, *Kirwan*; kaolin; leucargilla pt., *Wall.*; marga porcellana, *Wall.*; medulla Saxi, *Germ.*; melosark; microvermiculite; nacrite pt., *Brong.*; nakrit, *Breit.*; pholerite pt.; porcelain clay, *Kirwan*; porcelain-earth, *Jameson*; porcellanerde; porcellanite; porcellan jaspis; porzellanerde; porzellanthon, *Germ.*; restormelite; Samian earth; scaly talc; schuppiger thon, *Karst.*; smectite, *Salvetat*; smelite; talc granuleux, *H.*; talkerde von schuppigen theilen, *Wern.*; terra porcellanea, *Cronst.*; terra Samia; terre à foulon pt., *Fr.*; terre à porcelaine, *Brochant*; tuesite, *Thomson.*
CARNAT: Karnat, *Breit.*
LITHOMARGE pt., *Agric.*: Argile lithomarge, *H.*; friable lithomarge; lithomarga; rock marrow, *Jameson*; steinmarck pt., *Agric.*; steinmark von Rochlitz, *Klapr.*; thermantide porcellanite.
Kapnicite. See Wavellite.
Kapnikite. See Rhodonite.
Kapnite. See Smithsonite.
Karabé de Sodome. See Asphaltum.
Karamsinite. See Amphibole.
KARELINITE, *Herm.* 3 BiO.BiS. Crystalline.
Karinthin. See Amphibole.
Karminspath. See Carminite.
Karnat. See Kaolinite.
Karneol. See Quartz.
Kärntherischer bleispath. See Wulfenite.
Karpholite. See Carpholite.
Karpholith. See Carpholite.
Karphosiderit. See Carphosiderite.
Karphostilbite. See Thomsonite.
Karstenite. See Anhydrite.
Karund. See Corundum.
Karyinite. See Caryinite.
Kascholong. See Opal.
Kaschtschilon. See Opal.
Kassiterit. See Cassiterite.
Kassiterotantal. See Tantalite.

e Petalite.
See Cataplciite.
See Cataspilite.
See Mica.
See Mica.
e. See Quartz.
ber. See Talc and Mica.
s. See Marcasite.
. See Rhodonite.
Near Halloysite. Keffeki-
isher. Keffekil tartarorum,

See Keffekilite.
rtarorum, *Cronst.* See Keffe-

ITE, *Erdmann.* $Ca_2(Al, Fe, Ti,)O_3]_5$. Monoclinic. Yttro-
, *Scheer.*
See Spodumene.
See Serpentine.
See Amphibole.
al. See Mineral coal.
hle. See Mineral coal.
e. See Miargyrite.
LITE, *Damour.* $Pb_2Mn_2Si_2O_9$.
ombic.
ite. See Alunogen and Bos-
e.
te. See Amphibole.
See Cerargyrite.
e. See Cerargyrite.
See Mendipite and Phosgen-

See Mendipite and Phosgen-

ee Cerargyrite.
llite. See Amphibole.
See Kermesite.
ITE, *Chapman.* $2Sb_2S_3$. Sb_2
onoclinic. Antimoine hydro
H.; antimoine oxidé; anti-
oxidé sulfuré, *H.*; antimoine
antimonblende, *Leonh.*; anti-
plumosum, *von Born.*; anti-
sul. et ars. mineralisatum,
antimony blende, *Jameson*;
, *Beud.*; kermès minéral natif,
kermesome, *Chapman*; mine
oine en plumes, *Sage*; mine
oine granuleuse, *Sage*; min-
colorata, *Wall.*; oxide of an-
; prismatic antimony blende,
prismatic purple blende,
urple blende, *Haid.*; pyran-
, *Breit.*; pyrostibine; pyros-

KERMESITE—Continued.
tibite, *Glock*; red antimonical ore; red antimony, *James.*; red antimony ore, *James.*; röd spitsglasmulm, *Wall.*; rothspeissglanzerz, *Emmerling*; rothspeissglaserz, *Emmerling*; speissglanzblende pt., *Hausm.*; sulphuretted oxide of antimony.

Kermès minéral natif. See Kermesite.

Kermesome. See Kermesite.

Kerolite. See Cerolite and Serpentine.

Kerolith. See Cerolite.

Kérophyllite. See Amphibole.

Kerosene. See Naphtha.

KERRITE, *Genth.* $Mg_6Al_2(SiO_5)_3+10H_2O$.

Kersantyte. See Oligoclase.

KERSTENITE, *Dana.* $PbSeO_4$. Lead selenate; selenate of lead; selenbleispath, *Kerst.*; selenigsaures bleioxyd, *Germ.*; selenite of lead.

Kevil. See Calcite, Fluorite, and Barite.

Kibdelophan. See Menaccanite.

Kidney-stone. See Amphibole.

Kies. See Pyrite.

Kies, Thallium haltender, Breit. S, As, Cu, Fe. Tl.

Kiesel. See Quartz.

Kiesel-aluminite. See Allophane.

Kieselcerit. See Cerite.

Kieseleisenstein. See Hematite.

Kieselerde zinkoxyd. See Calamine.

Kieselgalmei. See Calamine.

Kieselguhr. See Opal.

Kieselgyps. See Anhydrite.

Kieselkupfer. See Chrysocolla.

Kieselmagnesit. See Magnesite.

Kieselmalachit. See Chrysocolla.

Kieselmangan. See Rhodonite.

Kieselmehl. See Opal.

Kieselschiefer. See Quartz.

Kieselspath. See Albite.

Kieselsinter. See Opal.

Kieseltuff. See Opal.

Kieselwismuth. See Eulytite.

Kieselzinkerz. See Calamine.

Kieselzinkspath. See Calamine.

KIESERITE, *Reichardt.* $MgSO_4+H_2O$. Orthorhombic. Martinsite, *Kenng.*

Kiëtyögit. See Apatite.

Kilbrickenite. See Geocronite.

Kilbrickruérite. See Geocronite.

Kilkenny coal. See Mineral coal.

Killinite. See Pinite.

Kilpatrick quartz. See Quartz.

Kimitotantalite. See Tantalite.
Kimmeridge shale. See Asphaltum.
King's yellow. See Orpiment.
Kinsigite, Fischer.
Kir, from Caspian Sea. C, H.
Kirosite. See Marcasite.
Kirrolith. See Cirrolite.
Kirwanite, Thomson. Chloritic mineral from Ireland.
Kis. See Pyrite.
Kischtim-parisit. See Kischtimite.
KISCHTIMITE, *Brush.* $La_6Ce_4O_3(CO_3)_6F_6+2H_2O$. Amorphous. Kischtim-parisit, *Korovaeff.*
Kisel. See Quartz.
Kiselstein. See Quartz.
Kiserit. See Kieserite.
Kjerulfine. See Wagnerite.
Klapperstein. See Siderite.
Klaprothine. See Lazulite.
Klaprothite. See Klaprotholite and Lazulite.
KLAPROTHOLITE, *Brush.* $3Cu_2S.2Bi_2S_3$. Orthorhombic. Klaprothite, *Petersen* and *Sandb.*
Kleb-schiefer. See Opal.
Klingstein. See Orthoclase.
Klinochlor. See Ripidolite.
Klinoclas. See Clinoclasite.
Klinocrocit. See Clinocrocite.
Klinocroite. See Clinocrocite.
Klinohumit. See Clinohumite.
Klinoklas. See Clinoclasite.
Klinophaeite. See Clinophaeite.
Klipsteinite, von Kob. $[(Mn, Mg)_3(Mn'''_2 Fe'''_2)]SiO_5+H_2O$. Amorphous. Black silicate of manganese; hydrosilicate of manganese; schwarzer mangan-kiesel; vattenhaltigt mangan oxid silikat, *Bahr.*
OPSIMOSE, *Beud.*: Schwartzbraunstein-erz von Klapperud, *Klapr.*
Knauffite. See Volborthite.
KNEBELITE, *Döbereiner.* $(Mn, Fe)_2SiO_4$. Crystalline. Eisenknebelit; igelströmite.
Knistersalz. See Halite.
Knits. See Galenite.
Kobaldine. See Linnæite.
Kobaltarsenikkies. See Arsenopyrite.
Kobaltbeschlag. See Erythrite.
Kobaltbleiglanz. See Clausthalite.
Kobaltblüthe. See Erythrite.
Kobaltglanz. See Linnæite and Cobaltite.
Kobaltkies. See Linnæite and Jaipurite.
Kobaltmalm. See Smaltite.
Kobaltmanganerz. See Wad.
Kobaltmanganspath. See Rhodochrosite.
Kobalt med förvswatladt järn. See Linnæite.
Kobaltmulm. See Wad.
Kobaltnickelkies. See Linnæite.
Kobaltscorodit. See Scorodite.
Kobaltschwärze. See Erythrite.
Kobaltspath. $CoCO_3$. Hexagonal.
Kobaltsulfuret. See Jaipurite.
Kobaltin. See Linnæite and Cobaltite.
Kobaltvitriol. See Bieberite.
Kobaltwismutherz. See Smaltite.
KOBELLITE, *Sätterberg.* $3PbS.(Bi, Sb)_2S_3$.
Koboldblüthe. See Erythrite.
Koboldine. See Linnæite.
Koboltbeslag. See Erythrite.
Koboltblomma. See Erythrite.
Koboltblüte. See Erythrite.
Koboltglanta. See Smaltite.
Kobolt med jern och svafelsyra. See Linnæite.
Kochelite, Websky; near Fergusonite. Tetragonal?
Kochsalz. See Halite.
Köflachite, Dölter. $C_{29}H_{43}O_2$.
Köhlerite. See Tiemannite.
Kölbingite, Breit. SiO_2, FeO, CaO. Monoclinic. Aenigmatit, *Breith.*
Königine. See Brochantite.
Königite. See Brochantite.
Könleinite. See Könlite.
KÖNLITE, *Kraus.* C_5H_4. Crystalline. Könleinite, *Haus.*
PHYLLORETIN, *Forch.*
Körniger gelber thoneisenstein. See Limonite.
KÖTTIGITE, *Dana.* $(Zn, Co, Ni)_3As_2O_8+8H_2O$. Monoclinic. Arsenate of zinc; zinc arsenate; zinkarseniat, *Köttig.*
Kohle. See Mineral coal.
Kohlenblende. See Mineral coal.
Kohlengalmei. See Smithsonite.
Kohlensäure. See Carbonic acid.
Kohlensaure strontianerde. See Strontianite.
Kohlensaure kalkerde. See Dol[illegible]
Kohlensaure talkerde. [illegible]
Kohlensaurer baryt

…H, *Pisani.* $Cu_4(OH)_6SO_4+2$ Orthorhombic. Devilline, …; lyellite, *Mask.*
…oc marble. See Calcite.
…cerium-scapolite. See Cerite.
…ANITE, *Haid.* $LaCO_3+9\ H_2O$. …orthombic. Carbocérine, *Beud.*; …nate of cerium, *Phillips*; cererit kohlensaures, *Berz.*; ceroxyhydrocerit; hydrolanthanit, …*k.*; hydrolanthite.
…**nocerite.** See Cerite.
…**es stanniferi spathacei.** See …heelite.
…**s ampelites.** See Mineral Coal.
…**s Armenius.** See Azurite, Gypsum, …nd Calcite.
…**s atramentarius.** See Copiapite.
…**s atramenti.** See Copperas Group.
…**s azul.** See Lapis-Lazuli.
…**s bononiensis.** See Barite.
…**s calaminaris.** See Calamine.
…**s calcarius.** See Calcite.
…**s carystius.** See Amphibole.
…**s colubrinus.** See Serpentine.
…**s colubrinus lamellus.** See Prochlorite.
…**pis corneus.** See Orthoclase.
…**is crucifer.** See Staurolite.
…**pis crucifer quem Hispani vocat cruciatum.** See Andalusite.
…**apis hepaticus.** See Barite.
…**apis Indicus.** See Amphibole.
LAPIS LAZULI, *Wall.* CaO, Na_2O, Al_2O_3. $Fe_2O_3SiO_2$, etc. Isometric. Σάπφειρος, *Theoph.*; Armenian stone; asuri; azul; cyaneus, *de Boot*; dodecahedral azure spar, *Mohs*; jaspis colore cœruleo cuprifer, *Wall*; lapis azul, *Arab.*; lasur-stein, *Germ.*; lazuli; lazulite, *H.*; lazurstein, *Werner.*; lazursten; native ultramarine; outre mer, *Fr.*; pierre d'azur, *Brochant*: tchingtchang, *China*; zeolites bleu, *Cronst.*; zeolithe bleue; zeolithus cœrulens, *von Born*; zuisang, *China.*
Lapis Lydius. See Quartz.
Lapis Lyncurius. See Zircon.
Lapis manganensis. See Pyrolusite.
Lapis mutabilis. See Opal.
Lapis nephriticus. See Amphibole.
Lapis niger ex quo conflatur candidum plumbum. See Wolframite.
Lapis ollaris. See Talc.
Lapis scissilis. See Talc
Lapis serpentinus. See Serpentine.
Lapis specularis. See Mica and Gypsum.
Lapis subrutilus atque non fere aliter ac argenti spuma splendens et friabilis (?). See Arsenopyrite.
Lapis Tiburtinus. See Calcite.
LARDERELLITE, *Bechi.* $(NH_4)_2B_{10}O_{16}+4\ H_2O$. Crystalline.
Lardite. See Pyrophyllite and Pinite.
Lasionite. See Wavellite.
Lasur. See Azurite.
Lasurfeldspath. See Orthoclase.
Lasurite. See Azurite.
Lasurstein. See Lapis Lazuli.
Latialite. See Haüynite.
Lationite. See Wavellite.
Latrobite. See Anorthite.
LAUBANITE, *Traube.* $Ca_2Al_4(SiO_3)_5+6\ H_2O$.
Laumonite. See Laumontite.
LAUMONTITE. $CaAl_2(SiO_3)_4+4\ H_2O$. Monoclinic. Ædelforsite, *Retzius*; caporcianite, *Sand.*; diatomous kouphone spar, *Mohs*; efflorescent zeolite; laumonite, *H.*; lomonite, *Wern.*; lomontite; mealy zeolite; red zeolite of Ædelfors, *Nicol*; retzite, *Berlin*; schneiderite, *Meneghin*; stilbite de Skye; zeolite d'Ædelfors; zéolithe efflorescente; zéolithe farineuse; zéolithe rouge d'Upsal.
LAURIONITE, *vom Rath.* $Pb(OH)_2$. $PbCl_2$. Orthorhombic.
LAURITE, *Wöhler.* (Ru, Os)$_2S_3$. Isometric. Ruthenium sulphuret.
Lautite, Frenzel. CuAsS. Orthorhombic.
Lave altérée alunifère. See Alunite.
Lave vitreuse du Cantal. See Orthoclase.
Lävenite. ZrO_2, CaO, Na_2O, SiO_2. Monoclinic.
Lavendulan, Breit. CuO, NiO, CoO, H_2O. Amorphous.
Lavezzo. See Talc.
Lavroffite. See Pyroxene.
LAWRENCITE, *Daubrée.* $FeCl_2$. Stagmatite, *Daubrée.*
Lawrowit. See Pyroxene.
LAXMANNITE, *Nordensk.* $(Pb, Cu)_6(PO_4)_2Cr_2O_9$. Monoclinic.
Lazionite. See Wavellite.
Lazuli. See Lapis Lazuli.
Lazulit du Verner. See Lazulite.
Lazulite. See Lapis Lazuli.

LEUCITE—Continued.
weisse granaten, *Hoffm.*; weisse granat-förmige schorl crystallen, *Ferber*; white garnet, *Wern.*; white garnet of Vesuvius, *Kirwan.*

LEUCOCHALCITE, *Sandb.* $Cu_4(OH)_2As_2O_5+2H_2O$. Crystalline.

Leucocyclite. See Apophyllite.

Leucofanite. See Leucophanite.

Leucogarnet. See Garnet.

Leucolite. See Dipyre and Topaz.

Leucolite d'Altenberg. See Topaz.

Leucolite de Maulèon. See Dipyre.

Leucolyte. See Leucite.

Leucomanganite*, *Sandb. MnO, FeO, Na_2O, H_2O, etc.

LEUCOPETRITE, *Brückner.* $C_{30}H_{64}O_2$. Crystalline. Leucoptrin.

Leucophane. See Leucophanite.

LEUCOPHANITE, *Dana.* $Na_2(Be, Ca)_3(CaF)_2(SiO_3)_5$. Monoclinic. Leucofanite; leucophane; leukophan, *Esm.*

Leucophthalmus. See Quartz.

Leucoptrin. See Leucopetrite.

LEUCOPYRITE, *Shep.* Fe_2As_4. Orthorhombic. Akontite; arseneisen pt., *Germ.*; arsenical iron; arsenical pyrites, *Allan*; arsenikalkies; arsenikeisen; arsenosiderit pt., *Glock.*; axotomous arsenic pyrites, *Jameson*; axotomous arsenical pyrites, *Mohs*; axotomer arsenik kies pt., *Mohs*; delarnite; diprismatic arsenical pyrites; fer arsènical, *Haüy*; fer arsènikal axotome, *Dufr.*; fer arsènical sans soufre; glanzarsenikkies; leukopyrite; löllingit pt., *Haid.*; löllingite; mohsine pt., *Chap.*; prismatic arsenical pyrites pt., *Jameson*; satersbergite, *Kenng.*; sesquiarseniet of iron, *Thomson.*

LEUCOTILE, *Hare.* $(Mg, Ca)_8(Al_2, Fe_2)Si_4O_{19}+8H_2O$. Orthorhombic. Leukotil.

Leucoxene. See Titanite.

Leukogranat. See Garnet.

Leukophan. See Leucophanite.

Leukopyrit. See Leucopyrite.

Leukotil. See Leucotile.

Leutrite. See Clay.

Leviglianite. See Metacinnabarite.

Levyne. See Levynite.

LEVYNITE, *Dana.* $CaAl_2Si_3O_{10}+4H_2O$. Hexagonal. Levyne, *Brewster*; macrotypous kouphone spar, *Mohs*; mesolin, *Berz.*

Lexuit. See Leucite.

Leydyite. See Leidyite.

Lherzolite. See Spinel.

Lherzolithe. See Pyroxene.

LIBETHENITE, *Breit.* $Cu_2P_2O_8Cu(OH)_2$. Orthorhombic. Aphrite, *Beud.*; blättricher pseudomalachite pt., *Haus.*; copper phosphate; cuivre phosphaté pt.; diprismatic olive malachite, *Mohs*; octädrischer phosphorkupfer, *Leonh.*; olivenchalchit; olivenerz pt., *Wern.*; phosphate of copper pt., *Phillips*; phosphorkupfererz pt.; pseudolibethenit, *Ramm.*

Lichtes rothgültigerz. See Pyrargyrite and Proustite.

Lichtes uranpecherz. See Gummite.

Liebenerite. See Pinite.

LIEBIGITE, *J. L. Smith.* $U, Ca_2(CO_3)_3+10H_2O$. Crystalline. Carbonate de cuivre anhydre double d'urane et de chaux, *Smith.*; uranium carbonate; uran-kalk-carbonat, *Vogl.*

Liebnerite. See Pinite.

Liége de montagne. See Amphibole and Pilolite.

Lievrite. See Ilvaite.

Light pyrargyrite. See Proustite and Pyrargyrite.

Light red silver ore. See Proustite and Pyrargyrite.

Ligniform asbestos. See Xylotile.

Lignite. See Mineral coal.

Lignite resin. C, H.

Ligure. See Zircon.

Ligurite. See Titanite.

Lik en huit spat. See Scheelite.

Lilac stone. See Lepidolite.

Lilalite. See Lepidolite.

Lillite*, *Reuss. Near Jollyte.

Limbachite*, *Frenzel. $Mg_3Al_2(SiO_4)_3+3H_2O$. Massive.

Limbilite. See Chrysolite.

Lime arsenate. See Pharmacolite.

Lime borate. See Datolite, Bechilite, and Priceite.

Lime borosilicate. See Datolite.

Lime carbonate. See Calcite and Aragonite.

Lime chabazite. See Chabazite.

Lime epidote. See Zoisite.

Lime feldspar. See Anorthite.

Lime fluate. See Fluorite.

Lime harmotome. See Phillipsite.

ite; near Mal achite. Kalk-
e, Zincken.
ype. See Scolecite.
e. See Nitrocalcite.
e. See Whewellite.
hate. See Apatite.
e. See Wollastonite.
ate. See Gypsum and An-

te. See Perofskite.
ate. See Scheelite.
te. See Autunite.
e. See Autunite.
diate. See Kalkvolborth-

te. Al_2O_3, CaO, P_2O_5, H_2O, etc.
vellite, Kosmann.
na garnet. See Garnet.
ie garnet. See Garnet.
arnet. See Garnet.
anganese pyroxene. See
e.
anganese-zinc pyroxene.
xene.
sia pyroxene. See Pyrox-

sia-iron garnet. See Gar-

sia-iron pyroxene. See
e.
sia-manganese pyroxene.
xene.
eldspar. See Labradorite.
per phosphate.
per vanadate.
oda mesotype. See Meso-

See Calcite.
hydraulic. See Calcite.
magnesian. See Dolomite.
e Limonite.
Glock. $Fe_3(OH)_6$. Massive.
i ore; bog ore, pt., *Jame-*
auneisenstein pt., *Wern.*;
on ore; limonite pt.; morast-
n.; quellerz, *Herm.*; rasen-
raseneisenstein; sumpferz,
; wiesenerz.
, *Beud.* $Fe_4O_3(OH)_6$. Amor-
Σχιστος λιθος, *Diosc.* Blod-
Wall; braunеisenstein pt.,
brauner glaskopf, *Wern.*;
ematite; brown iron ore;
ronstone; brown oxide of
enoxydhydrat; fer limo-

LIMONITE—Continued.
neux; fer oxidé geodique; fer oxidé hämatite, *H.*; fer oxidé brun; fer oxidé pseudomorphique; fer peroxidé hydraté; fibrous brown hematite; hæmatites pt.; hedgehog stone; hematite pt.; hématite brune; hepatine; herbeckite, *Dufr.*; hydrate of iron; hydrous oxide of iron; hyposiderite; mine de fer brune; oxide of iron; pipe ore; prismatic iron ore, *Mohs*; reniform iron ore; sandstone ore; scaly brown iron ore; smith ore; stachelschweinstein; stalactitic limonite; wood iron ore.

BOG-IRON ORE, *Jameson.* Black brush; bog ore; fer oxidé rubigneux massive, *H.*; fer terreux limoneux, *Brong.*; ferrum limosum, *Wall*; limnit, *Glock.*; lowland iron ore, *Kirwan*; marsh ore; meadow ore, *James.*; mine des lieux bourbeux; minera ferri lacustris v. palustris, *Wall*; minera ferri subaquosa, *Wall*; mine de fer limoneuse; mine de marais, *Brochant*; mine de prairie, *Brochant*; morass ore, *Jameson*; morassy iron ore, *Kirwan*; morasterz, *Wern.*; myrmalm, *Wall*; raseneisenerz; raseneisenstein; see-erz; sjoemalm, *Wall*; sumpferz, *Brochant*; swamp ore; swampy iron ore; wiesenerz, *Wern.*

CLAY IRONSTONE: Ætites; argillaceous iron ore; bean ore; bohnerz, *Wern.*; Bohemian bean ore; brown clay ironstone; clay iron ore; columnar red clay iron ore, *James.*; eagle stone; eisen nieren, *Wern.*; etites; fer oligiste bacillaire, *Haüy*; fer oxidé brun ætite, *Haüy*; fer oxidé brun granuleux, *Brong.*; fer oxidé cloissoné, *Haüy*; fer oxidé rubigneux globuliforme, *Haüy*; granular iron ore; körniger gelber thoneisenstein, *Hausm.*; lenticular iron ore, *James.*; linsenförmiger thoneisenstein, *Wern.*; nodular iron ore, *Kirw.*; pea iron ore; pea ore, *James.*; pisiform ironstone, *Kirw.*; reniform brown clay iron ore, *James.*; stanglicher thoneisenstein, *Wern.*; yellow clay ironstone.

OCHRE, Ωχρα, *Theoph.*: Argiles ferrugineuses; argiles ocreuses; argile ochreuse jaune, *Haüy*; berggeel, *Agric.*; berggelb; brauner eisenrahm;

LIMONITE—Continued.
brown ochre, *James.*; brown ochre of iron; eisenocker; eisenrahm; English red; fer oxydé brun ocreux, *Brong.*; fer terreux argileux; fer terreux limoneux; iron ochre; Lemnian reddle; Neuseeland ocker; ochra, nativa; ochreous iron ore; ochriger brauneisenstein, *Wern.*; ocher, gelb, *Gesn.*; ocre; paco; pacos; terre d'ombre; umber; umbra; yellow ochre.

KALIPHITE, *Ivanhow*: Caliphite, *Thom.*

LINARITE, *Brooke.* $(Pb, Cu)_2(OH)_2SO_4$. Monoclinic. Bleilasur; cupreous anglesite; cupreous sulphate of lead; kupferbleispath, *Germ.*; plomb sulfaté bleu; plomb sulfaté cuprifère; sulfate de plomb cuivreux, *Beud.*

Lincolnite. See Heulandite.

LINDACKERITE, *Vogl.* $2\ Cu_3As_3O_8 \cdot 3\ NiSO_4 + 7\ H_2O$. Orthorhombic.

Lindsayite. See Anorthite.

LINNÆITE, *Haid.* Co_3S_4. Isometric. Cobalt pyrites; cobalt pyriteux, *Necker*; cobaltkies, *von Leonhard*; cobalt sulfuré, *Lucas*; cobaltum ferro sulphurato mineralisatum, *Cronst.*; cobaltum pyriticosum, *Linn.*; isometric cobalt pyrites, *Mohs*; kobaldine, *Beud.*; kobaltglanz pt., *Wern.*; kobaltin; kobaltkies, *Hausm.*; kobalt med förvswafladt järn, *Cronst.*; kobaltnickelkies, *Kamm.*; kobolt med jern och svafelsyra, *Brandt*; linneit, *Haid.*; mine de cobalt sulfureuse, *de Lisle*; müsenite; nickel linæite; schwefelkobalt, *Berz.*; siegenite, *Dana*; sulphuret of cobalt, *Phillips*; svafelbunden kobolt, *Hisinger.*

Linneit. See Linnæite.

Linseite. See Anorthite.

Linsenerz. See Liroconite.

Linsenförmiger eisenglimmer. See Göthite.

Linsenförmiger thoneisenstein. See Limonite.

Linsenkupfer. See Liroconite.

Linum vivum. See Amphibole.

Lintonite. See Thomsonite.

Lionite. See Tellurium.

Liparite. See Fluorite.

Liquidum bitumen. See Naphtha.

LIROCONITE, *Beud.* $Cu_9Al_4(OH)_{18}(AsO_4)_5 + 20\ H_2O$. Monoclinic. Chalcophacit, *Glock.*; copper arsenate; cuivre arséniaté en octaèdre obtus, *H.*; cuivre octaèdral; lenticular arseniate of copper, *Allan*; lenticular ore, *Jameson*; lenticular copper; lentil ore; lentulite; linsenerz, *Wern.*; linsenkupfer, *Haus.*; lirokonit; lirokon malachit pt., *Mohs*; octahedral arseniate of copper, *Bourn.*; prismatic lirocone malachite, *Mohs.*

Lirokon malachit. See Liroconite.

Lirokonit. See Liroconite.

LISKEARDITE, *Maskelyne.* $Al_6(OH)_{18}As_2O_8 + 12\ H_2O$. Massive.

Litheosphorus. See Barite.

Litheospore. See Barite.

Lithionglimmer. See Lepidolite.

Lithionite. See Lepidolite.

Lithion mica. See Lepidolite.

LITHIOPHILITE, *Brush.* $Li_3Mn_3(PO_4)_3$.

Lithiophorite, Breit. A decomposition product of Psilomelane.

Lithographic stone. See Calcite.

Lithomarga. See Kaolinite.

Lithomarge. See Kaolinite, Halloysite and Pinite.

Lithophosphorus suhlensis. See Fluorite.

Lithoxylon. See Opal.

Lithrodes. See Nephelite.

Litidionite, Scacchi. Glassy blue crust on earthy nucleus from Vesuvius.

Liver-coloured copper ore. See Bornite.

Liver opal. See Opal.

Liver ore. See Cuprite.

Liver ore of mercury. See Cinnabar.

Liver stone. See Cinnabar.

LIVINGSTONITE, *Mariano Barcena.* $Hg_2S \cdot 4\ Sb_2S_3$. Orthorhombic (?).

Llanca. See Chrysocolla.

Loam. See Clay.

Loboit. See Vesuvianite.

Lodestone. See Magnetite.

Lodulite. See Orthoclase.

Loganite. See Penninite.

Lölingite. See Löllingite and Leucopyrite.

Löllingite. See Leucopyrite.

LÖLLINGITE, *Dana.* $FeAs_2$. Orthorhombic. Arseneisen; arsenical arsenikalsen: arsenka

TE—Continued.
ite; fer arsenical, *Haüy*; fer
axotome, *Dufr.*; fer arseni-
soufre; geierite; geyerite;
anikkies; lölingite, *Haid.*;
pt., *Chap.*; nickeliferous
, *Hofm.*; prismatic arseni-
tes, *Jameson*; sätersbergite,

nickeliferous. See Löllingite.

See Laumontite.
See Laumontite.
See Marcasite and Arsenite.

See Crystallites.
See Prochlorite.
ee Pyroxene.
eyman. SiO_2, CaO, etc.
ee Löweite.
. $2\,Na_2Mg(SO_4)_2+5\,H_2O$. Te-
. Löveite.
E, *Mitscherlich.* $K_2Al_6S_4O_{32}+$
Massive. Alaunstein, *Römer*;
ne, *Phillips.*
on ore. See Limonite.
See Orthoclase.
See Orthoclase.
See Vermiculite.
r. See Iolite and Corundum.
ee Melanterite.
See Calcite.
See Calcite.
TE, *Mask.* and *Field.* Fe_7P_4
$_2O$. Monoclinic.
nontii. See Calcite and Mar-

TE, *Tschermak.* $B_2O_3 : Fe_2O_3 :$
1 : 20.
braunsteinerz. See Rhodo-
.
silber. See Selbite.
. See Calcite.
d'Astrakan. See Calcite.
opaline. See Calcite.
. See Calcite.
. See Calcite.
Scaiola (Scagliola). See
.
e Oligoclase, Orthoclase, and
.
GITE, *Nöllner.* $Mg_3H_2(PO_4)_2$
H_2O.
sedativ-spath. See Bora-

Luni marble. See Calcite.
Lunnite. See Pseudomalachite.
Lupi spuma. See Wolframite.
Lupus metallorum. See Stibnite.
Luscite. See Fahlunite.
Luxullianite. See Tourmaline.
LUZONITE, *Weisbach.* $3\,Cu_2S+As_2S_3$. Crystalline.
Lychnis. See Corundum and Spinel.
Lychnites. See Calcite.
Lydian stone. See Quartz.
Lydit. See Quartz.
Lyellite. See Langite.
Lyncurion. See Zircon.
Lyncurium. See Zircon and Tourmaline.
Lynx sapphire. See Iolite and Corundum.
Lysesten. See Barite.
Lythrodes. See Pinite.
Macfarlanite. See Huntilite and Animikite.
Macle. See Andalusite.
Macle basaltique. See Andalusite.
Macle hyaline. See Andalusite.
Maclurite. See Pyroxene and Chondrodite.
Maclureite. See Pyroxene and Chondrodite.
MACONITE, *Genth.* $R''_3R'''_4Si_4O_{17}+5\,H_2O$.
Macrotypous kouphone-spar. See Levynite.
Macrotypous lime haloid. See Dolomite.
Macrotypous parachrose-baryte. See Rhodochrosite.
Madreporic marble. See Calcite.
Madreporite. See Calcite.
Madreporstein. See Calcite.
Magneferrite. See Magnesioferrite.
Magnes. See Magnetite.
Magnesia. See Periclasite, Pyrolusite, and Wolframite.
Magnesia alaun. See Pickeringite.
Magnesia alba. See Hydromagnesite.
Magnesia alum. See Pickeringite.
Magnesia-alumina garnet. See Garnet.
Magnesia borate. See Boracite.
Magnesia carbonate. See Magnesite.
Magnesia chloride. See Carnallite, Tachydrite and Chloromagnesite.
Magnesia fluophosphate. See Wagnerite.
Magnesia fluosilicate. See Chondrodite.

Magnesia friabilis terriformis. See Wad.
Magnesia garnet. See Garnet.
Magnesia glimmer. See Biotite and Phlogopite.
Magnesia hydrate. See Brucite.
Magnesia hydro-carbonate. See Hydromagnesite.
Magnesia idocrase. See Vesuvianite.
Magnesia indurata. See Psilomelane.
Magnesia-iron amphibole. See Amphibole.
Magnesia-lime amphibole. See Amphibole.
Magnesia-lime-iron amphibole. See Amphibole.
Magnesia-lime-manganese amphibole. See Amphibole.
Magnesia-lime spinel. See Spinel.
Magnesia mica. See Biotite and Phlogopite.
Magnesia, native. See Brucite.
Magnesia nitrate. See Nitromagnesite.
Magnesia, pure. See Magnesite.
Magnesia salpeter. See Nitromagnesite.
Magnesia sulphate. See Epsomite.
Magnesia vitriolata. See Epsomite.
Magnesian carbonate of lime. See Dolomite.
Magnesian iron ore. See Magnesioferrite.
Magnesian limestone. See Dolomite.
Magnesian magnetite. See Magnetite.
Magnesian menaccanite. See Menaccanite.
Magnesian pharmacolite. See Berzelite.
Magnésie boratée. See Boracite.
Magnésie carbonatée. See Magnesite.
Magnésie carbonaté silicifère. See Magnesite.
Magnésie chlorurée. See Chloromagnesite.
Magnésie hydratée. See Brucite.
Magnésie hydratée silicieuse. See Serpentine.
Magnésie hydro-carbonatée. See Hydromagnesite.
Magnésie muriatée. See Chloromagnesite.
[illegible]ésie native. See Brucite.
[illegible]nitratée. See Nitromagnesite.
[illegible]sphatée. See Wagnerite.
[illegible]. See Epsomite.
Magnesinitre. See Nitromagnesite.
MAGNESIOFERRITE. (Fe, Mg)O, Fe_2O_3. Isometric. Magneferrit, *Kenng.*; magnesian iron ore; magnoferrit, *Ramm.*; talkeisenstein.
Magnesite. See Sepiolite.
MAGNESITE, *Karst.* $MgCO_3$. Hexagonal. Balldisserite; bandisserite, *Dela.*; carbonate of magnesia, *Phil.*; carbonate of magnesia and iron; giobertite, *Beud.*; kieselmagnesit; kohlensaurer talk; kohlensaure talkerde, *Mitch.* and *Lamb.*; magnésie carbonatée silicifère; magnesite of Piedmont; magnesitspath; native talc earth, *James.*; pure magnesia; reine talkerde; spath, magnesian, *Necker*; talcum carbonatum, *Wern.*; talkspath, *Hartmann.*
BREUNERITE, *Haid.*: Brown spar pt.; mesitine spar, *Dana*; walmstedtite, *Leonh.*
Magnesite amianthoïde. See Brucite.
Magnesite of Piedmont. See Magnesite.
Magnesite of Salinelle. See Sepiolite.
Magnesite of Vallecas. See Sepiolite.
Magnesitspath. See Magnesite.
Magnesium acido aëreo mineralisatum. See Rhodochrosite.
Magnesium ochraceum rubrum. See Rhodocrosite.
Magneteisenerz. See Magnetite.
Magneteisenerz, schlackiges. See Menaccanite.
Magneteisenstein. See Magnetite.
Magneti amica. See Magnetite.
Magnetic iron. See Magnetite.
Magnetic iron ore. See Magnetite.
Magnetic iron sand. See Magnetite and Iserite.
Magnetic pyrites. See Pyrrhotite.
Magnetic sulphuret of iron. See Pyrhotite.
Magnetis. See Talc.
Magnetischer eisenstein. See Magnetite.
Magnetischer kies. See Pyrrhotite.
Magnetischer pyrotin. See Pyrrhotite.
MAGNETITE, *Haid.* Fe_3O_4. Isometric. Πράχλειᾶ λιθος, *Gr.*; αἱδηρος αγονσα, *Theoph.*; Μαγνῆς λ. *Dioso.*; aimant, *Beud.*; ein

MAGNETITE—Continued.
octaedrischer; eisenmohr; fer aimant; fer magnétique, *Broch.*; fer oxydé magnétique; fer oxydulé, *H.*; fer oxydulé aimantaire; heraclion, *Plin.*; iron sand; jernsand, *Wall*; lodestone; magnes; magnet; magneteisenerz; magneteisenstein, *Wern.*; magneti amica; magnetic iron ore, *James.*; magnetic oxide of iron; magnetischer eisenstein, *Wern.*; magnumite; minera ferri attractoria, *Cronst.*; minera ferri nigricans; native magnet; octahedral iron ore, *Mohs*; oxide of iron; oxydulated iron, *Phil.*; peroxide of iron; siderite aimant, *Necker*; sideritus; siegelstein, *Agric.*; vignite, *Dufr.*

MAGNESIAN: Talk eisenerz, *Breit.*

OCHREOUS: Earthy magnetic iron; eisenmulm, *Germ.*

TITANIFEROUS.

Magnetite, titaniferous. See Magnetite.

Magnetkies. See Pyrrhotite.

Magnet, native. See Magnetite.

Magnetopyrites. See Pyrrhotite.

Magnochromite. See Chromite.

Magnoferrite. See Magnesioferrite.

Magnolite. Hg_2TeO_4 (?). Crystalline.

Makite. See Thenardite.

MALACHITE, *Wall.* $Cu_2(OH)_2CO_3$. Monoclinic. Ærugo nativa, *Wall.*; atlaserz, *Germ.*; bärggrönt pt., *Wall.*; berggrün pt., *Germ.*; calciform copper ore; carbonate of copper; chrysocolla pt., *Plin.*, *Agric.*; copper carbonate; cuivre carbonaté vert, *L'Abbé Fontana*; cupriferous sandstone of Alderley; false emerald of copper mines, *Theoph.*; green carbonate of copper, *Phil.*; green malachite; hemiprismatic habroneme malachite, *Mohs*; kohlensaures kupfer; koppargrön, *Wall.*; molochit, *Agric.*; molochites pt., *Agric.*, *Plin.*; mountain green pt.; patina; verde de montagne; viride montanum pt., *Wall.*

Malachite, blue. See Azurite.

Malachite, green. See Malachite.

Malachite, lime. See Lime Malachite.

Malachite mica. See Torbernite.

Malachitkiesel. See Chrysocolla.

Malacolite. See Pyroxene.

Malacolith. See Pyroxene.

Malacon, near Zircon; malakon, *Scheerer.*

Malacone. See Cyrtolite.

Malakolite. See Pyroxene.

Malakolith. See Pyroxene.

Malakon. See Malacon.

Maldonite, Ulrich. Au_2Bi. Wismuth gold.

Malinofskite. See Tetrehedrite.

Malinowskit. See Tetrehedrite.

MALLARDITE, *Carnot.* $MnSO_4+7\,H_2O$. Monoclinic.

Maltha. See Pittolium group.

Malthacite. See Smectite.

Malthazit. See Smectite.

Malthe. See Pittolium group.

MAMANITE, *Goebel.* $K_2Mg_2Ca_3(SO_4)_8+3\,H_2O$.

Mänaken. See Menaccanite.

Mancanit. See Mancinite.

Mancinite, Jacquot. (?) *Not* a trisilicate of zinc, *Uzielli.* Mancanite.

Mandelato. See Calcite.

Manganalaun. See Apjohnite.

Manganamphibole. See Rhodonite.

Manganblende. See Alabandite.

Manganbrucite. See Brucite.

Mangandisthen. See Ardennite.

Manganepidote. See Piedmontite.

Manganerz. See Psilomelane.

Manganerz, graues. See Pyrolusite and Manganite.

Manganerz, kupferhaltiges. See Crednerite.

Manganerz, prismatoidisches. See Manganite.

Manganerz, schwarzes. See Hausmannite.

Manganese. See Wolframite and Pyrolusite.

Manganese alum. See Apjohnite and Bosjemanite.

Manganèse argentin. See Manganite.

Manganese, arsenical. See Kaneite.

Manganese arseniuret. See Kaneite.

Manganèse bisulfuré. See Hauerite.

Manganese, black. See Hausmannite.

Manganese black silicate. See Klipsteinite.

Manganese blende. See Alabandite.

Manganese, bog. See Wad.

Manganèse carbonaté. See Rhodochrosite.

Manganese chloride. See Scacchite.

Manganèse cristallisé. See Manganite.

Manganese, cupreous. See Wad.

[illegible] See Wad.

[illegible] See Pyrolusite.

[illegible] See Pyrolusite.

[illegible] See Hausmannite.

[illegible] See Manganite.

[illegible] See Manganite.

[illegible] See Hausmannite, Manganite and Psilomelane.

[illegible] See Tephroite.

[illegible] See Rhodonite and Rhodochrosite.

[illegible] See Rhodochrosite.

[illegible] See Rhodochrosite.

[illegible] See Rhodochrosite.

[illegible] See Rhodochrosite.

[illegible] See Rhodochrosite.

[illegible] See Rhodochrosite.

[illegible] See Rhodochrosite.

[illegible] See Rhodochrosite and Manganite.

[illegible] See Alabandite.

Manganese sulphuret. See Alabandite.

Manganese sulphuret. See Alabandite.

Manganese alumina garnet. See Garnet.

[illegible] See Manganite.

[illegible] prismatic. See Pyrolusite.

Manganese ore, pyramidal. See Hausmannite.

Manganesian garnet. See Garnet.

Manganglanz. See Alabandite.

Mangangranat. See Garnet.

Manganhedenbergite. See Pyroxene.

Manganhisingerite. See Hisingerite.

Manganhyperoxyd. See Pyrolusite.

Manganiferous dolomite. See Dolomite.

MANGANITE, *Haid.* $Mn_2O_3+H_2O$. Orthorhombic. Acerdèse, *Bourd.*; grau braunstein pt., *Hausm.*; grau braunsteinerz pt., *Werner*; grau manganerz pt., *Karst.*; gray manganese; gray manganese ore; gray oxide of manganese; hydrated deutoxyd of manganese, *Turner*; hydrous oxide of manganese; manganaise cristallisé, *de Lisle*; manganèse argentin; manganèse hydraté; manganèse hydraté pseudo-prismatique; manganèse oxydé métalloïde, *H.*; neukirchit; neukirkite, *Thom.*; oxide of manganese; oxydé de manganèse prismatique; peroxydé de manganèse hydraté; peroxydé de manganèse métalloïde; prismatoidal manganese ore, *Mohs*; prismatoidisches manganerz, *Mohs*.

Manganjasper. See Quartz.

Mangankies. See Hauerite.

Mangankiesel. See Rhodonite.

Mangankiesel, schwarzer. See Klipsteinite.

Mangankohlensaures. See Rhodochrosite.

Mangankupfererz. See Crednerite.

Mangankupferoxyd. See Crednerite.

Manganocalcite. See Calcite.

MANGANOCALCITE, *Breit.* $2MnCO_3$. $MgCa(CO_3)_2$. Orthorhombic. Carbonate of manganese; fasriger braunspath, *Werner*.

Manganо-magnesia alum. See Bosjemannite.

Manganо-magnetite, $(MnFe)_3O_4$. Isometric.

Manganopal. See Opal.

Manganophyll. See Manganophyllite.

Manganophyllite, Igelst. $R''R'''_2(SiO_4)_2$. Hexagonal. Manganophyll.

Manganosiderite. See Rhodochrosite.

MANGANOSITE, *Blomstrand.* MnO. Isometric.

Manganoso-manganique. See Hausmannite.

MANGANOSTIBIITE, *Brögger*. $R_{10}(SbAs)_2O_{15}$, R=Mn, Fe, Ca, Mg.

Manganquarz. See Quartz.

Manganschaum. See Wad.

Manganspath. See Rhodochrosite.

Mangantantalite. See Tantalite.

Manganvesuvian. See Vesuvianite.

Manganvitriol. See Fauserite.

Manganwolframit. See Wolframite.

Manganzinkspath. $MnCO_3$, $ZnCO_3$.

Marasmolite. See Sphalerite.

Marble. See Calcite.

Marble of Languedoc. See Calcite.

Marble verd-antique. See Calcite.

Marbre bleu fleuri. See Calcite.

Marbre bleu turquin. See Calcite.

Marbre brèche. See Calcite.

Marbre cipolin. SeeCalcite.

Marbre de Florence. See Calcite.

Marbre de Paros. See Calcite.

Marbre du Languedoc. See Calcite.

Marbre du mont Hymette. See Calcite.

Marbre élastique. See Dolomite.

Marbre fleur de pêcher. See Calcite.

Marbre griotte. See Calcite.

Marbre incarnat. See Calcite.

Marbre jaune de Sienne. See Calcite.

Marbre noir antique. See Calcite.

Marbre pentélique. See Calcite.

Marbre petit antique. See Calcite.

Marbre petit granite. See Calcite.

Marbre portor. See Calcite.

Marbre ruiniforme. See Calcite.

Marbre saccharoïde. See Calcite.

Marbre Sainte-Anne. See Calcite.

Marbre Sarrancolin. See Calcite.

Marbre statuaire. See Calcite.

Marbre vert de Gênes. See Calcite.

Marcasite. See Pyrite and Bismuth.

MARCASITE, *Haid.* FeS_2. Orthorhombic. Ballesterosit; binarkies; blätterkies; ferrum jecoris colore; fer sulfuré, *Haüy*; fer sulfuré blanc pt., *H.*; fer sulfuré prismatique rhomboïdale, *Bourn.*; hydropyrite; hydrous pyrites; iron pyrites; iron sulphide; iron sulphuret; kausimkies; kyrosit; lonchidite, *Breit.*; ludus Helmontii; marchasita; markasit, *Haid.*; metalonchidite; miroir des Incas; pierre d'arquebuse; pierre de carabine; pierre des Incas; prismatic iron pyrites, *James.*; pyrite blanche; pyrite de Boom; pyrites aquosus pt., *Wall*; pyrites argenteo colore; pyrites fuscus pt., *Wall.*; pyrites fuscus lamellosus, *Wall.*; pyrites lamellosus, *von Born.*: pyrites rhomboïdales pt., *de Lisle*; rhombischer eisenkies; swafwelkies pt., *Cronst.*; vattenkies; wasserkies, dichter; wasserkies pt., *Agric.*; weisseisenkies; weisserkies, *Agric.*; white bisulphuret of iron; white iron pyrites, *Phillips*; white pyrites, *Aikin*.

CELLULAR PYRITES: Zellkies pt., *Germ.*

COCKSCOMB PYRITES, *Forst.* and *de Lisle*: Kammkies; pyrites lamelleuse en crêtes de coq, *Forst.*

HAARKIES pt., *Hausm.*

HEPATIC PYRITES pt., *Wern.*: Dichter kies; hepatopyrite; lebererz, *Agric.*; leberkies, *Wern.*

KYROSITE, *Breit.*: Kirosite; weisserz; weisskupfer; weisskupfererz.

RADIATED PYRITES: Fer sulfuré aciculaire radié; fer sulfuré radié, *H.* and *Brong.*; strahlkies, *Wern.*; strahliger wasserkies.

SPEERKIES: Sparkies, spear pyrites; sperkies.

Marceline. See Braunite and Rhodonite.

Marchasita. See Pyrite and Marcasite.

Marcylite. See Melaconite.

Marekanite. See Orthoclase.

Marga porcellana. See Kaolinite.

Margarite. See Œllacherite.

MARGARITE, *Fuchs*. $H_2CaAl_4Si_2O_{12}$. Orthorhombic. Clingmanite, *Silliman*; corundellite, *Silliman*; diphanite, *Nord.*; emerilite; emerylite, *Smith*; emerylith; kalkglimmer; lesleyite; mica nacré; pearl mica, *James.*; perlglimmer, *Mohs*; rhomboidal pearl mica, *Mohs*.

Margarites. See Crystallites.

MARGARODITE, *Schafhäutl*. $H_8R_2Al_8Si_9O_{34}$. Monoclinic. Hydrous muscovite.

Margode, *Nicholson*. A *hard*, bluish, clay-like stone.

Marialite. See Hallynite.

MARIALITE, *vom Rath*. $CaNa_4(SiO_3)_8$. Tetragonal. Marialith.

Manganese, earthy. See Wad.
Manganese, gray. See Pyrolusite.
Manganèse gris. See Pyrolusite.
Manganèse gris lamelleux. See Hausmannite.
Manganèse hydraté. See Manganite.
Manganèse hydraté cuprifère. See Melaconite and Wad.
Manganèse hydraté pseudo-prismatique. See Manganite.
Manganese hydrous oxide. See Hausmannite, Manganite and Psilomelane.
Manganese idocrase. See Vesuvianite.
Manganese lithoïde. See Rhodonite and Rhodocrosite.
Manganèse oxidé hydraté concrétionné. See Psilomelane.
Manganèse oxidé rose silicifère amorphe. See Rhodochrosite.
Manganese oxide. See Hausmannite, Braunite and Pyrolusite.
Manganèse oxydé hydraté. See Hausmannite.
Manganèse oxydé métalloïde. See Manganite.
Manganèse oxydé noir brunâtre. See Psilomelane.
Manganèse oxydé siliceux. See Rhodonite.
Manganèse oxydé violet silicifère. See Piedmontite.
Manganese phosphate. See Triplite and Triphyllite.
Manganèse phosphaté ferrifère. See Triplite.
Manganese, red. See Rhodonite.
Manganèse rose. See Rhodonite.
Manganèse rouge. See Piedmontite and Rhodonite.
Manganese silicate. See Rhodonite.
Manganèse silicaté rose. See Rhodonite.
Manganese spar. See Rhodonite and Rhodochrosite.
Manganese sulphide. See Alabandite and Hauerite.
Manganèse sulfuré. See Alabandite.
Manganese sulphuret. See Alabandite.
Manganese-alumina garnet. See Garnet.
Manganese ore, brachytypous. See Braunite.
Manganese ore, prismatic. See Pyrolusite.
Manganese ore, pyramidal. See Hausmannite.
Manganesian garnet. See Garnet.
Manganglanz. See Alabandite.
Mangangranat. See Garnet.
Manganhedenbergite. See Pyroxene.
Manganhisingerit. See Hisingerite.
Manganhyperoxyd. See Pyrolusite.
Manganiferous dolomite. See Dolomite.

MANGANITE, *Haid.* $Mn_2O_3+H_2O$. Orthorhombic. Acerdèse, *Bend.*; grau braunstein pt., *Haus.*; grau braunsteinerz pt., *Wern.*; grau manganerz pt., *Karst.*; gray manganese; gray manganese ore; gray oxide of manganese; hydrated deutoxyd of manganese, *Turner*; hydrous oxide of manganese; manganaise cristallisé, *de Lisle*; manganèse argentin; manganèse hydraté; manganèse hydraté pseudo-prismatique; manganèse oxydé métalloïde, *H.*; neukirchit; newkirkite, *Thom.*; oxide of manganese; oxydé de manganèse prismatique; peroxydé de manganèse hydraté; peroxydé de manganèse métalloïde; prismatoidal manganese ore, *Mohs*; prismatoidisches manganerz, *Mohs*.

Manganjasper. See Quartz.
Mangankies. See Hauerite.
Manganokiesel. See Rhodonite.
Manganokiesel, schwarzer. See Klipsteinite.
Mangankohlensaures. See Rhodochrosite.
Mangankupfererz. See Crednerite.
Mangankupferoxyd. See Crednerite.
Manganocalcite. See Calcite.

MANGANOCALCITE, *Breit.* $2MnCO_3.(MgCa)CO_3$. Orthorhombic. Carbonate of manganese; fasriger braunspath, *Wern.*

Mangano-magnesia alum. See Bosjemannite.
Mangano magnetite, $(MnFe)_3O_4$. Isometric.
Manganopal. See Opal.
Manganophyll. See Manganophyllite.
Manganophyllite, Igels. **$R''R'''_8(SiO_4)_5$. Hexagonal. Manganophyll.**
Manganosiderite. See Rh-
MANGA-

inoso-manganique. See Hausmannite.
ANOSTIBIITE, *Brögger*. R_{10} $bAs)_2O_{15}$, R=Mn, Fe, Ca, Mg.
inquarz. See Quartz.
inschaum. See Wad.
inspath. See Rhodochrosite.
intantalite. See Tantalite.
invesuvian. See Vesuvianite.
invitriol. See Fauserite.
inwolframit. See Wolframite.
nzinkspath. $MnCO_3$, $ZnCO_3$.
molite. See Sphalerite.
e. See Calcite.
e of Languedoc. See Calcite.
e verd-antique. See Calcite.
e bleu fleuri. See Calcite.
e bleu turquin. See Calcite.
e brèche. See Calcite.
e cipolin. SeeCalcite.
e de Florence. See Calcite.
e de Paros. See Calcite.
e du Languedoc. See Calcite.
e du mont Hymette. See Calcite.
e élastique. See Dolomite.
e fleur de pêcher. See Calcite.
e griotte. See Calcite.
e incarnat. See Calcite.
e jaune de Sienne. See Calcite.
e noir antique. See Calcite.
e pentélique. See Calcite.
e petit antique. See Calcite.
e petit granite. See Calcite.
e portor. See Calcite.
e ruiniforme. See Calcite.
e saccharoïde. See Calcite.
e Sainte-Anne. See Calcite.
e Sarrancolin. See Calcite.
e statuaire. See Calcite.
e vert de Gênes. See Calcite.
site. See Pyrite and Bismuth.
CASITE, *Haid.* FeS_2. Orthombic. Ballesterosit; binarkies; itterkies; ferrum jecoris colore; fer furé, *Haüy*; fer sulfuré blanc pt., ; fer sulfuré prismatique rhomboïle, *Bourn.*; hydropyrite; hydrous rites; iron pyrites; iron sulphide; n sulphuret; kausimkies; kyrosit; chidite, *Breit.*; ludus Helmontii; rchasita; markasit, *Haid.*; metalite; miroir des Incas; pierre se; pierre de carabine;

MARCASITE—Continued.
pierre des Incas; prismatic iron pyrites, *James.*; pyrite blanche; pyrite de Boom; pyrites aquosus pt., *Wall*; pyrites argenteo colore; pyrites fuscus pt., *Wall.*; pyrites fuscus lamellosus, *Wall.*; pyrites lamellosus, *von Born.*: pyrites rhomboïdales pt., *de Lisle*; rhombischer eisenkies; swafwelkies pt., *Cronst.*; vattenkies; wasserkies, dichter; wasserkies pt., *Agric.*; weisseisenkies; weisserkies, *Agric.*; white bisulphuret of iron; white iron pyrites, *Phillips*; white pyrites, *Aikin*.
CELLULAR PYRITES: Zellkies pt., *Germ.*
COCKSCOMB PYRITES, *Forst.* and *de Lisle*: Kammkies; pyrites lamelleuse en crêtes de coq, *Forst.*
HAARKIES pt., *Hausm.*
HEPATIC PYRITES pt., *Wern.*: Dichter kies; hepatopyrite; lebererz, *Agric.*; leberkies, *Wern.*
KYROSITE, *Breit.*: Kirosite; weisserz; weisskupfer; weisskupfererz.
RADIATED PYRITES: Fer sulfuré aciculaire radié; fer sulfuré radié, *H.* and *Brong.*; strahlkies, *Wern.*; strahliger wasserkies.
SPEERKIES: Sparkies, spear pyrites; sperkies.
Marceline. See Braunite and Rhodonite.
Marchasita. See Pyrite and Marcasite.
Marcylite. See Melaconite.
Marekanite. See Orthoclase.
Marga porcellana. See Kaolinite.
Margarite. See Œllacherite.
MARGARITE, *Fuchs.* $H_2CaAl_4Si_2O_{12}$. Orthorhombic. Clingmanite, *Silliman*; corundellite, *Silliman*; diphanite, *Nord.*; emerilite; emerylite, *Smith*; emerylith; kalkglimmer; lesleyite; mica nacré; pearl mica, *James.*; perlglimmer, *Mohs*; rhomboidal pearl mica, *Mohs*.
Margarites. See Crystallites.
MARGARODITE, *Schafhäutl.* $H_8R_2Al_8$ Si_9O_{34}. Monoclinic. Hydrous muscovite.
Margode, Nicholson. A *hard*, bluish, clay-like stone.
Marialite. See Hauynite.
MARIALITE, *von Rath.* $CaNa_4Al_4$ $(SiO_3)_9$. Tetragonal. Marialith.

Marialith. See Marialite.
Marianglass. See Gypsum.
Mariatite. See Sphalerite.
Marienglas. See Gypsum.
Marionite. See Hydrozincite.
Mariposite. See Muscovite.
Markasit. See Marcasite.
Marl. See Calcite.
Marmairolite, Holst. R''SiO_3, R=Mg, Ca, Na_2, K_2, etc. Monoclinic (?).
Marmatite. See Sphalerite.
Marmolite. See Serpentine.
Marmolith. See Serpentine.
Marmor. See Calcite.
Marmor bardiglio di Bergamo. See Anhydrite.
Marmoreus ramulosus. See Aragonite.
Marmor fugax. See Gypsum.
Marmor luculleum. See Calcite.
Marmor metallicum. See Barite.
Marmor serpentinum. See Serpentine.
Marmor zeblicium. See Serpentine.
Marmor zöblizense. See Serpentine.
MARSH GAS. CH_4. Brisou; empyreumatic or carburetted hydrogen gas, *James.*; empyreumatisches hydrogen gas, *Mohs*; gekohltes wasserstoffgas, *Mohs*; hydrogen carburetted; hydrogène carboné; hydrogène semi carboné; ignis fatuus; kohlenwasserstoffgas, *Haus.*; protocarburé d'hydrogène; schwere brennbare luft; sulphur; terrou.
Marsh ore. See Limonite.
Martial arseniate of copper. See Scorodite.
Martial pyrites. See Pyrites.
Martinite, Kloos. 2 $Ca_3(PO_4)_2$. 4 $CaHPO_4$ +H_2O. Hexagonal.
Martinsite. See Halite and Kieserite.
Martite. See Hematite.
Mascagnine. See Mascagnite.
MASCAGNITE. $(NH_4)_2SO_4$+H_2O. Orthorhombic. Ammoniaque sulfatée, *Fr.*; ammonia sulphate; mascagnin, *Karst.*; mascagnine, *Dana*; maskagnin, *Karst.*; prismatic ammoniac salt, *Mohs*; sel ammoniac de Glauber, *Sage*; sel ammoniac vitriolique; sulphate of ammonia.
Maskagnin. See Mascagnite.
MASKELYNITE, *Fischer.* R''$Al_2Si_3O_{10}$. Isometric.
Masonite. See Chloritoid.
MASSICOT, *Huot.* PbO. Orthorhombic. Bleiglätte; bleioxyd; glätte; lead ochre; lead oxide; oxide of lead; plomb oxidé; plomb oxidé jaune; plumbic ochre, *Dana.*
Massive boracite of Stassfurt. See Boracite.
Massive gehlenite. See Mellite.
MATLOCKITE, *Greg.* Pb_2Cl_2O. Tetragonal. Lead oxychlorid; oxychloride of lead; oxychlorure de plomb; plomb chloruré, *Dufr.*; plomb murio carbonaté.
MATRICITE, *Holst.* Mg_3SiO_4+H_2O. Crystalline.
Matrix of corundum. See Anorthite.
Maulilite. See Labradorite.
MAXITE, *Laspeyres.* 5 $PbSO_4$. 9 Pb CO_3. 4 PbO+5 H_2O. Orthorhombic.
Meadow ore. See Limonite.
Mealy zeolith. See Natrolite.
Méconites. See Calcite.
MEDJIDITE, *Smith.* $U_3Ca_3(SO_4)_3$+15 H_2O. Crystalline. Sulphate of uranium and lime; uranium sulphate.
Medulla Saxi. See Kaolinite.
Meerschaluminite. See Pholerite.
Meerschaum. See Sepiolite.
Meerschaum of Sala. See Serpentine.
Meerschaum of Taberg. See Serpentine.
MEGABASITE, *Breit.* (Fe'', Mn'')$_4$ W_3O_{13}. Orthorhombic. Blumite, *Liebe.*
Megabromite. See Embolite.
Mehl zeolith. See Natrolite and Mesolite.
MEIONITE, *Haüy.* $Ca_6Al_8(SiO_4)_9$. Tetragonal. Hyacinte blanche de la Somma, *de Lisle*; hyacinthine, *la Metherie*; mejonit; white hyacinth of Somma.
Mejonit. See Meionite.
Melaconisa. See Melaconite.
Melaconise. See Melaconite.
MELACONITE, *Huot* and *Dana.* CuO. Isometric. Black copper, *Phillips*; black oxyd of copper; copper oxyd; cuivre oxidé noir, *Haüy*; kupferschwärze, *Wern.*; manganèse hydraté cuprifére; melaconisa, *Scac.*; melaconise; melakonit; oxide of copper.
MARCYLITE, *Shepard.*
Melakonit. See Melaconite.
Melam

)r. See Triphylite.
m. See Rochlederite and Me-
te.
:LLITE, *Dana.* $C_{12}H_{10}O_4$.
hous. Melanchym, *Haid.*
ız. See Stephanite.
lrit. See Palagonite.
See Garnet.
'e, *Brögger.* Ca, Ce, SiO_2, etc.
onal.
roite. See Phœnicochroite.
e. See Hisingerite.
h. See Hisingerite.
'gite. Cubical SiO_2. Pseudo-
ous. Sulfuricin.
rite, *Cooke.* $Fe'''_8SiO_{14}+6H_2O$.
hous.
'e. $Pb_3Fe'''_2Si_3O_9$.
)THALLITE, *Scacchi.* Cop-
oride from Vesuvius.
a. See Copperas group and
erite.
e. See Melanterite.
'ERITE, *Haid.* $Fe_2(OH)_2SO_4$
). Monoclinic. *Μελαντηρία, ἴνθου, Diosc.* Atramentum
m, etc., *Plin.*; atramentum
ım viride, *Agric.*; atramentum
Gesner; bourboulite; cop-
couperose verte; eisen vitriol,
fer sulfaté, *H.*; fer sulfaté
green vitriol, *Allan*; grüner
; hemiprismatic vitriol salt,
iron sulphate; iron vitriol,
; luckite; melanteria, *Leymer.*;
érie, *Beud.*; rhomboidal vit-
ımes.; sulphate of iron, *Phill-*
itriol of iron; vitriol salt,
vitriol vert; vitriolite; vi-
ı ferri; vitriolum martis; vi-
ı viride.
e. See Pyroxene.
ne resin. See Mellite.
nharz. See Mellite.
ios. See Zircon.
See Mellite.
'E, *Delam.* (Ca, Mg, Na_2)$_{12}$
$e_2)_3(SiO_4)_9$. Tetragonal. Hum-
ite, *Mont.* and *Cov.*; humboldt-
humboldtilith melilith, *Mohs*;
h; mellilite, *de Bellevue*; mel-
somervillite, *Brooke*; zurlite,
t
"te.
te.

Melinite, Glock. Near Halloysite. Argile ocreuse jaune pt., *Haüy*; gelbe erde pt., *Wern.*; vierzonite; yellow ochre pt.
Melinite. See Opal.
Melinophane. See Meliphanite.
Mélinose. See Wulfenite.
Meliphane. See Meliphanite.
MELIPHANITE. $Na_4(Be, Ca)_{12}F_4Si_9O_{30}$. Tetragonal or Hexagonal. Melinophan, *Scheer.*; meliphane, *Dana.*
Mellate of alumina. See Mellite.
Mellate of iron. See Humboldtine.
Mellilite. See Melilite and Mellite.
Mellilithe. See Melilite.
Mellite, Readwin. A resin.
MELLITE, *Phill.* $Al_3C_{12}O_{12}+18H_2O$. Tetragonal. Alumina mellate; honigstein, *Wern.*; honigsteinsäure+alaunerde+wasser, *Klapr.*; honeystone, *James.*; massive gehlenite; melichrome harz; melichrome resin, *Mohs*; melilite; melilithus; mellate of alumina; mellate d'alumine; mellilite, *Kirw.*; mellites, *Gmel.*; pierre de miel, *Born.*; pyramidal honey-stone, *James.*; pyramidal mellichrome, *Man.*; somervillite, *Brook*; succin transparent en cristaux octaédres.
Mellites. See Mellite.
MELONITE, *Genth.* Ni_2Te_3. Hexagonal. Tellurnickel.
Melopsite, Breit. Near Halloysite.
Melosark. See Kaolinite and Halloysite.
Menac. See Titanite.
Menacan. See Menaccanite.
MENACCANITE. $(FeTi)_2O_3$. Hexagonal. Axotomes eisenerz, *Mohs*; axotomous iron; axotomous iron ore, *Mohs*; eisenhaltige titanerze; eisensand; eisentitan, *Haus.*; fer oligiste axotome; fer oxydulé titané; ferruginous oxide of titanium; fer titané, *Cordier*; gallizinite, *Beud.*; grégorite; hydroilmenite; iserite; magneteisenerz, schlackiges; mänaken, *Karst.*; menacan, *Wern.*; menachanite, *McGregor*; menakanit, *Klapr.*; sidérite titanique, *Necker*; specular iron pt.; titaneisen, *Germ.*; titaneisenerz, *Naumann*; titaneisenstein, *Haus.*; titanioferrite, *Chap.*; titane oxidé ferrifère, *H.*; titanic iron, *Allan*; titaniferous iron; titaumagneteisen; titanate of iron; trappeisenerz; uncleavable iron ore, *Shep.*

MENACCANITE—Continued.
BASANOMELAN, *von Kob.*: Eisenrose, *von Kob.*; eisen rosen; rose iron.
CRICHTONITE, *Bournon*: Crailonite, *Bourn.*; hypostatit; hystatite, *Breit.*; hystatisches eisenerz, *Breit.*; washingtonite, *Shepard.*
ILMENIT, *A. T. Kupfer.*
KIBDELOPHAN, *von Kob.*; Cibdelophane; trappisches eisenerz, *Breit.*
KRAGEROË HEMATITE.
MAGNESIAN MENACCANITE: Picrotanite.
MOHSITE, *Levy.*
PARACOLUMBITE, *Shep.*: Parailmenite, *Shep.*; paracolombite.
UDDEVALLITE.

Menachanite. See Menaccanite.
Menachine ore. See Titanite.
Menakanerz, braun. See Titanite.
Menakanerz, gelb. See Titanite.
Menakanite. See Menaccanite.
Menakerz. See Titanite.
Menas. See Titanite.

MENDIPITE, *Breit.* $PbCl_2$. 2 PbO. Orthorhombic. Berzelite, *Levy*; cerasine, *Beud.*; cerasite, *Beud.*; cerastite; chloride of lead, *Thomson*; chlorspath, *Breit.*; churchillite; kerasine pt., *Beud.*; kerasite; muriate of lead, *Phil.*; new ore of lead from Mendip; oxide of lead; oxychloride of lead; peritomous lead baryte, *Haid.*; plomb chloruré pt., *Fr.*; plomb murio-carbonaté, *Levy*; plomb muriaté, *Broch.*; salzsauresblei von Mendip; saltsyradt blei.

MENDOZITE. $Na_2SO_4.Al_2(SO_4)_3+22\ H_2O$. Alunogen; alun sodifère, *Dufr.*; natronalaun, *von Kob.*; natron alum, *Huot.*; natriumalaun, *Germ.*; soda alum, *Phillips*; solfatarite pt., *Shep.*

MENEGHINITE, *Bechi.* 4 PbS. Sb_2S_3. Monoclinic.

Mengite. See Monazite.

MENGITE, *G. Rose.* ZrO_2, FeO and TiO_2. Orthorhombic. Ilmenite, *Brooke.*

Menilite. See Opal.
Mennige. See Minium.
Mercurblende. See Cinnabar.
Mercure. See Mercury.
Mercure antimonié. See Ammiolite.
Mercure argental. See Amalgam.
Mercure argentif. See Amalgam.
Mercure argentiféré. See Amalgam and Arquerite.
Mercure chloruré. See Calomel.
Mercure corné. See Calomel.
Mercure doux. See Calomel.
Mercure hépatique. See Cinnabar.
Mercure ioduré. See Coccinite.
Mercure muriaté. See Calomel.
Mercure natif. See Mercury.
Mercure séléniuré. See Tiemannite.
Mercure sulfuré. See Cinnabar.
Mercure sulfuré bitumineux. See Cinnabar.
Mercurial hepatic-ore. See Cinnabar.
Mercurial horn-ore. See Calomel.
Mercurial liver-ore. See Cinnabar.
Mercurius. See Mercury.

MERCURY. Hg. Isometric.
Χυτός ἄργυρος, Theophr.; *Ὑδράργυρος καθ' ἑαυτήν, Dioscor.* Argentum vivum, *Plin.*; bergzinnober; gediegen quecksilber, *Germ.*; hydrargyros, *Plin.*; mercure; mercure natif, *Fr.*; mercurius, *Alchem.*; native mercury; native quicksilver; quecksilber; quicksilver.

Mercury amalgam. See Amalgam.
Mercury antimonite. See Ammiolite.
Mercury chloride. See Calomel.
Mercury horn. See Calomel.
Mercury iodid. See Coccinite.
Mercury selenide. See Tiemannite.
Mercury sulphide. See Cinnabar.
Merda di Diavolo. See Dysodile.
Merenosite. See Morenosite.
Mergel. See Calcite.
Mergelkalk. See Calcite.
Merkurblende. See Cinnabar.
Merkurglanz. See Onofrite.
Meroxene. See Biotite.
Mesitin. See Mesitite and Pistomesite.
Mesitine spar. See Magnesite.
Mesitinspath. See Mesitite.

MESITITE. $2\ MgCO_3.FeCO_3$. Hexagonal. Carbonate de fer et de magnésie; mesitin, *Breit.*; mesitinspath pt.

Mesole. See Thomsonite.
Mesolin. See Levynite.
Mesolite. See Thomsonite.

MESOLITE, *Gehlen* and *Fuchs.* $(Ca, Na_2)Al_2Si_3O_{10}+2\ H_2O$. Monoclinic. Antrimolite, *Thom.*; antrimolitine; cotton stone; fibrous scolite or harringtonite, *Thom.*; lime
meeotv
me

Mine des lieux bourbeux. See Limonite.
Mine des prairies. See Limonite.
Mine d'étain. See Cassiterite.
Mine d'étain commune. See Cassiterite.
Mine de zinc vitriforme. See Calamine.
Mine rouge de cuivre. See Cuprite.
Minera antimonii. See Stibnite.
Minera antimonii plumosa. See Jamesonite.
Minera antimonium colorata. See Kermesite.
Minera argenti alba pt. See Tetrahedrite.
Minera argenti cornea. See Cerargyrite.
Minera argenti grisea. See Tetrahedrite.
Minera argenti nigri spongiosa. See Stephanite.
Minera argenti rubra pellucida. See Proustite.
Minera argenti rubra, opaca. See Pyrargyrite.
Minera argenti rubra nigrescens. See Pyrargyrite.
Minera cobalti cinerea. See Smaltite.
Minera cobalti terrea fuliginea. See Wad.
Minera cupri calciformis pura et indurata. See Cuprite.
Minera cupri hepatica. See Bornite.
Minera cupri lazurea. See Bornite.
Minera de fer limoneuse. See Limonite.
Minera ferri alba spathiformis. See Siderite.
Minera ferri attractoria. See Magnetite.
Minera ferri lacustris v. palustris. See Limonite.
Minera ferri nigricans. See Magnetite.
Minera ferri specularis. See Hematite.
Minera ferri sub aquosa. See Limonite.
Minera hepatica. See Pyrrhotite.
Minera plumbi rubra. See Crocoite.
Minera plumbi spathacea. See Cerussite.
Minera plumbi viridis. See Mimetite and Pyromorphite.
Minerai de fer en grains. See Chamoisite.
Mineral adipocire. See Hatchettite.
Mineral agaric. See Calcite.
Mineral alkali. See Natron.
Mineral blue. See Azurite.
Mineral caoutchouc. See Elaterite.
Mineral charcoal. See Mineral coal.

MINERAL COAL. *Ἀνθρακευτὰ δσὰ τῶν τοιούτων γῆσ πλέον ἔχειῃ καπνοῦ* (=coal-like substances containing more earth than fire), *Arist.*; *Εὐ τινας λίθους οἱ καίονται* (=certain stones that burn), *Arist.*; *Οὓς δὲ καλοῦσιν εἰθρακας των θρυπτομένων διὰ τὴν χρείας εἰσι γεώδεις* (minerals dug for use which are called simply coals, are earthy, but will kindle and burn like charcoal), *Theoph.*; *Ἔνιοι δὲ τῶν θρανστῶν ἀνθρακοῦν ται τῇ κωὐσει καὶ διαμένουσι πλείω χσόνον* (some brittle stones become by burning like glowing coals, and remain so a long time), *Theoph.*; *θρακίας λιθος, Arist.*; *Γαγγίτης λίθος, Strabo*; *Γαγάτης λίθος, ορακίας λίθος, Dioso.*; blende charbonneuse; charbon fossile; gemma Sammothracia, *Plin.*; houille, *Fr.*; kohle, *Germ.*; kohlenblende, *Leonhard*; thracius lapis, *Plin.*

ANTHRACITE COAL, *Karst.*: Anthrazit; backkohle; blind coal; flew coal; flint coal; foliated coal; glance coal, *James.*; glanz-kohle, *Wern.*; hard coal; harzige steinkohle, *Haid.*; harzlose steinkohle, *Mohs*; steinkohle; stone coal; stony coal, *Berger.*

BITUMINOUS COAL: Bituminit; blätterkohle; brassy coal; brat; cone in cone coal; cherry coal; crow coal; faserkohle; grobkohle; mucks; peacock coal; russkohle; sandkohle; schieferkohle; schwartzkohle; sinter coal; slate coal; smut; soft coal.

BROWN COAL: Bastkohle; bituminoses holz; bituminous wood; bois bitumineux; braunkohle; cendres noires; fibrous brown coal; fibrous coal; holzkohle, mineralische; humus lignite; moor coal; moorkohle; miocene pitch coal; nadelkohle; papierkohle; peat; pechkohle; pitch coal; schwefelkohle; strombolo; surturbrand; terre de Cologne; terre d'ombre; tourbes; turf; wood coal.

CANNEL COAL: Ampelitis; cannelite; hoo cannel; hoo coal; horn coal; kannel coal; kannelkohle; Kilkenny coal; lapis ampelitis; parrot c splent coal; splint; splint coal.

COKE: Native coke.

MICROSOMMITE, *Scacchi.* (Ca, Na_2, $K_2)_9(AlO)_{12}Cl_4SO_4(SiO_3)_{12}$. Orthorhombic.

Microvermiculite. See Vermiculite.

MIDDLETONITE, *Johnston.* $C_{40}H_{44}O_2$. Amorphous.

Miemite. See Dolomite.

Miesite. See Pyromorphite.

Mignumite. See Magnetite.

Mikrobromit. See Embolite.

Mikroklin. See Orthoclase.

Mikrophyllite.* See Labradorite.

Mikroplakite.* See Labradorite.

Milanite. See Halloysite.

MILARITE, *Kenng.* $HKCa_2Al_2Si_{12}O_{30}$. Orthorhombic. Giuffite; giufite.

Milchquarz. See Quartz.

Milk opal. See Opal.

Milky quartz. See Quartz.

MILLERITE, *Haid.* NiS. Hexagonal. Capillary pyrites, *James.*; capillose, *Chapman*; fer sulfuré capillaire, *H.*; gediegen nickel, *Klapr.*; gelb nickelkies; haarkies, *Wern.*; hair nickel; hair pyrites, *James.*; harkise, *Beud.*; nickelkies, *Germ.*; nickel natif, *Haüy*; nickel sulfuré, *Fr.*; nickel sulphide; nickel sulphuret; schwefelkies; schwefelnickel, *Berz.*; sulphuret of nickel, *Phil.*; tricopyrit, *Glock.*

Miloschin. See Miloschite.

MILOSCHITE. $(AlCr)_2SiO_5+3\ H_2O$. Amorphous. Miloschin, *Herder.*; myloschine; serbian, *Breit.*

Mimetene. See Mimetite.

Mimetese. See Mimetite.

Mimetesite. See Mimetite.

MIMETITE, *Haid.* $Pb_5Cl(AsO_4)_3$. Hexagonal. Arsenate of lead; arséniate de plomb; arseniate of lead, *Phil.*; arsenikalisches bleyerz, *Lenz.*; arsenikbleispath; arseniksaures blei; arsensaures blei, *Germ.*; bleiblüthe; buntbleierz pt.; endlichite; flockenerz; green lead ore pt., *James.*; grünbleierz pt., *Hoffman*; mimetene, *Shep.*; mimetèse, *Beud.*; mimetesit, *Breit.*; minera plumbi viridis pt., *Wall.*; plomb arséniaté, *Fr.*; plomb arséniaté hydraté; plomb arsénié; plomb phospho arséniaté; plomb vert arsenical, *Proust*; plumbum arsenico mineralisatum, *Wall.*; pyromorphite pt., *Mohs*; rhombohedral lead baryte, *Mohs*; traubenblei pt.

MIMETITE—Continued.

CAMPYLITE: Kampylit, *Breit.*

HEDYPHANE, *Breit.*: Hediphane, *Dufr.*

Mine corné. See Cerargyrite.

Mine d'acier. See Siderite.

Mine d'Amadou. See Jamesonite.

Mine d'antimoine au plumes. See Jamesonite.

Mine d'antimoine en plumes. See Kermesite.

Mine d'antimoine granuleuse. See Kermesite.

Mine d'antimoine grise tenant argent. See Freieslebenite.

Mine d'argent grise antimoniale. See Freieslebenite.

Mine de cobalt arsenicale. See Smaltite.

Mine de cobalt arsenicale tenant cuivre. See Niccolite.

Mine de cobalt arsénico-sulfureuse. See Cobaltite.

Mine de cobalt blanche. See Cobaltite.

Mine de cobalt grise. See Smaltite.

Mine de cobalt sulfureuse. See Linnæite.

Mine de cuivre couleur de brique. See Cuprite.

Mine de cuivre grise. See Tetrahedrite.

Mine de cuivre panachée ou violette. See Bornite.

Mine de cuivre vitreuse rouge. See Cuprite.

Mine de fer blanche. See Siderite.

Mine de fer brune. See Limonite.

Mine de fer oxydé en grains agglutinés. See Chamoisite.

Mine de fer rouge. See Hematite.

Mine de fer spathique. See Siderite.

Mine de laiton. See Aurichalcite.

Mine des marais. See Limonite.

Mine de mercure cornée. See Calomel.

Mine de mercure hepatique. See Cinnabar.

Mine de plomb blanche. See Cerussite.

Mine de plomb brune. See Pyromorphite.

Mine de plomb noire. See Gra

Mine de plomb verte. Se
phite.

* The microscopic inclosures to which Labradorite owes it

...dène sulfuré. See Molybdenite.
...YBDENITE, *Haid.* MoS_2. Hex...nal. Bleyertz; dirhombohedral ...tome glance, *Mohs*; eutomglanz; ...olidenno, *Petr.*; molybdæna, *Hielm*; ...olybdänglanz, *Leonh.*; molybdänit, ...aid.; molybdänkies; molybdena ..., *Wall*; molybdena glance; molyb...ne sulfuré, *H.*; plomo de agua, ...*Werg.*; rhombohedral molybdena ...lance, *James.*; rhombohedrischer ...olybdänglanz, *Mohs*; sulphide of ...olybdenum; sulphuret of molyb...dena, *Phil.*; sulphur ferro et stanno **saturatum**, *Cronst.*; wasserblei, *Wern.*; **wasserbley.**

Molybdenum, oxide of. See Molybdite.

Molybdenum, sulphide of. See Molybdenite.

Molybdic acid. See Molybdite.

Molybdic ochre. See Molybdite.

Molybdic silver. See Wehrlite.

Molybdine. See Molybdite.

MOLYBDITE, *Breit.* MoO_3. Orthorhombic. Acide molybdique; fer **molybdaté**; molybdänochre; molyb**dänocker**, *Germ.*; molybdate of iron; **molybdena**; molybdène oxydé; **molybdic acid**; molybdic ochre, *Shep.*; **molybdine**, *Greg.* and *Lettson*; oxide **of** molybdenum, *Phil.*

Molybdomenite. Lead selenide.

MOLYSITE, *Dana.* Fe_2Cl_6. Amor**phous.** Chloride of iron; eisenchlorid, *Haus.*; eisenchlorür; fer muriaté, *Haüy*; iron chloride; protochlorid **of iron**, *Mont.* and *Cov.*

Monacit. See Monazite.

Monacitoïd. See Monazite.

MONAZITE, *Breit.* 5 $(Ce, La, Di)_3(PO_4)_2$. $Th_3P_2O_9$. Monoclinic. Cerium phosphate; cérium phosphaté, *Dufr.*; cryptolite, *Wöhler*(?); edwardsite, *Shep.*; erinite, *Shep.*; mengite, *Brooke*; monacit; monacitoïd; monazitoid, *Herm.*; turnerite, *Lery*; urdite, *Forbes* and *Dahl.*

Monazitoid. See Monazite.

Mondstein. See Albite, Gypsum, Oligoclase, and Orthoclase.

Monetite, *Shep.* $CaHPO_4$.

Monheimite. See Smithsonite.

MONIMOLITE, *Igelström.* $R_{15}Sb_8O_{37}$ or $R_3Sb_2O_8$. Tetragonal. Moniomolite.

Moniomolite. See Monimolite.

MONITE, *Shep.* $Ca_3P_2O_8+H_2O$.

Monophan. See Epistilbite.

MONRADITE, *Erdm.* 4 $(Mg, Fe)SiO_3+H_2O$.

Monrolite. See Fibrolite.

Monrolith. See Fibrolite.

MONTANITE, *Genth.* $Bi_2TeO_6+2H_2O$. Amorphous.

Montebrasite. See Amblygonite.

MONTICELLITE, *Brooke.* $CaMg(SiO_4)_2$. Orthorhombic. Batrachit, *Breit.*; kalk olivin; peridot blanc, *Scacchi.*

Montmartrite. See Gypsum.

Montmilch. See Halloysite and Calcite.

MONTMORILLONITE, *Salvetat.* $H_2Al_2Si_4O_{12}+H_2O$. Massive. Bergseife, *Germ.*; bole of Stolpen, *Kenng.*; confolensite; delanouite, *Dufr.*; delanovit, *Kenng.*; erinite, *Thom.*; pierre de savon; saponite, *Nicklès*; severite, *Pelletier*; soapstone, *Nicol*; steargillite, *Meillet*; stolpenit, *Kenng.*

MONZONITE, *von Kobell.* $(Ca, Mg, Fe)_{12}Al_8Si_{21}O_{72}$. Compact.

Moonstone. See Albite, Gypsum, Oligoclase, Orthoclase, and Meteorites.

Moor coal. See Mineral coal.

Moorkohle. See Mineral coal.

Moosachat. See Quartz.

Morass ore. See Limonite, Limnite, and Xanthosiderite.

Morassy iron-ore. See Limonite, Limnite, and Xanthosiderite.

Morasterz. See Limonite, Limnite, and Xanthosiderite.

MORDENITE, *How.* $(Ca, Na_2)Al_2Si_9O_{22}+6H_2O$. Amorphous. Steeleite, *How.*

MORENOSITE. $NiSO_4+7H_2O$. Orthorhombic. Merenosite; morenosita, *Casares*; niccolum vitriolatum, *Berg.*; nickel sulphate; nickel viktril; nickel vitriol, *Hunt*; pyromeline, *von Kob.*; sulfate hydraté de nickel; sulfato de nickel, *Casares*; sulfato de niquel, *Casares*; vitriolum ferrum and niccolum continens, *Cronst.*

Moresnetite. Near Calamine.

Morion. See Quartz.

Mormorion. See Quartz.

Mornite. See Amphibole and Labradorite.

Moronolite. See Jarosite.

MINERAL COAL—Continued.
EARTHY BROWN COAL: Erdige braunkohle; paraffin coal; paraffinkohle; wachskohle; wax coal.
JET: Black amber; gagat; gagates, *Plin.*; jaïet; jais; jay; jayet; jeat.
MINERAL CHARCOAL.
TORBANITE: Boghead cannel coal; bogheadkohle.

Mineral de Coromandel. See Tscheffkinite.

Mineral from Strontian. See Strontianite.

Mineral from Ytterby. See Fergusonite.

Mineral graisse. See Pittolium group.

Mineral oil. See Naptha, Pittolium, and Benzole.

Mineral pea. See Pittolium.

Mineral pitch. See Pittolium and Asphaltum.

Mineral resin. See Copalite.

Mineral resin, black. See Asphaltum.

Mineral tallow. See Hatchettite.

Mineral tar. See Pittolium group.

Mineral turquois. See Turquois.

Mineral wax. See Urpethite.

Minium. See Cinnabar.

MINIUM. Pb_3O_4. Amorphous. Lead oxide; mennige, *Germ.*; native minium, *Phil.*; oxide of lead; plomb oxidé; plomb oxidé rouge, *H.*

Minium nativum. See Cinnabar.

Miocene pitch coal. See Mineral coal.

MIRABILITE, *Haid.* $Na_2SO_4+10\ H_2O$. Monoclinic. Gediegen glaubersalz, *Reuss*; glauber salt, *Kirw.*; glaubersalz, *Haus.*; natürliches bittersalz pt., *Lenz*; natürliches wundersalz, *Germ.*; prismatic glauber salt, *Mohs*; reussin, *Karst.*; sal mirabile, *Glauber*; sel admirable; sel de Glauber, *Broch.*; soda sulphate; soude sulfatée, *H.*; schwefelsaures natron, *Leonh.*; sulfate de soude; sulphate of soda, *Phil.*

Miriquidite, Frenzel. PbO, Fe_2O_3, As_2O_5, P_2O_5, etc. Hexagonal.

Miroir d'âne. See Gypsum.

Miroitante. See Hypersthene.

Miroir des Incas. See Marcasite.

Mirrorglance. See Wehrlite.

MISENITE, *Scacchi.* $KHSO_4$.

Mispickel. See Arsenopyrite and Plinian.

Mispickel, nickeliferous. See Arsenopyrite.

Mist. See Water.

Mistpickel. See Arsenopyrite and Plinian.

Misy. See Jarosite, Copiapite, and Copperas group.

Misylite. See Copiapite.

Mittelstein. See Calcite.

MIXITE, *Schrauf.* $Cu_{10}BiAs_5H_{22}O_{35}$. Crystalline.

MIZZONITE, *Scacchi.* $(Ca, Na_2)_5Al_6(SiO_4)_9$. Tetragonal.

Mocha stone. See Quartz.

Mochos. See Quartz.

Mocho stone. See Quartz.

Mock diamonds. See Quartz and Zircon.

Mock lead. See Sphalerite.

Modumite. See Skutterudite.

Moelle de pierre. See Calcite.

Moffrasite. See Bindheimite.

Mohr mineral. See Cinnabar.

Mohsine. See Löllingite and Leucopyrite.

Mohsite. See Menaccanite.

Mokkastein. See Quartz.

Molarite. See Quartz.

Moldavite. See Orthoclase.

Molidenno. See Molybdenite.

Molisite. FeO, TiO_2, etc.

Mollit. See Lazulite.

Molochites. See Malachite.

Molybdæna. See Graphite, Molybdenite, and Galenite.

Molybdänblei. See Wulfenite.

Molybdänbleispath. See Wulfenite.

Molybdänglanz. See Molybdenite.

Molybdänit. See Molybdenite.

Molybdänkies. See Molybdenite.

Molybdänochre. See Molybdite.

Molybdänocker. See Molybdite.

Molybdänsilber. See Wehrlite.

Molybdænum magnesii. See Pyrolusite.

Molybdänuran. Mo, U, O.

Molybdate of iron. See Molybdite.

Molybdate of lead. See Wulfenite.

Molybdena. See Molybdenite.

Molybdena glance. See Molybdenite.

Molybdena ochre. See Molybdite.

Molybdena silver. See Wehrlite.

Molybdenated lead ore. See **Wulfen**ite.

Molybdène oxydé. See **Molyb**

Nacrite. See Kaolinite and Muscovite.
Nadeleisenerz. See Göthite.
Nadelerz. See Aikinite.
Nadelkohle. See Mineral coal.
Nadelstein. See Aragonite.
Nadelzeolith. See Natrolite.
NADORITE, *Flajolet.* $PbSbClO_2$. Orthorhombic.
Næsumite, Flajolet. Near Fahlunite. Nasumite, *Forbes.*
Nagiagererz. See Nagyagite.
Nagyagererz. See Nagyagite.
NAGYAGITE, *Haid.* $(Pb, Au)_4 S Te_7$. Orthorhombic. Aurum galena, ferro et particulis volatibilibus mineralisatum, *Scopoli*; bitelluret of lead, *Thomson*; black sylvan ore, *James.*; black tellurium, *Phillips*; blättererz, *Karst.*; blättertellur, *Karst.*; elasmose, *Beud.*; elasmosine, *Huot*; foliated tellurium, *Allan*; gold of nagyag, *James.*; nagiagererz, *Wern.*; nagyagererz, *Wern.*; nagyker ore, *James.*, or gris lamelleux, *von Born*; prismatic black tellurium, *James.*; prismatic tellurium glance, *Mohs*; pyramidal tellurium glance, *Mohs*; silvane lamelleux, *Brochant*; tellure de plomb et d'or; tellure feuilleté; tellure natif auro-plombifère, *H.*; tellure plumbo-aurifère, *H.*; tellurium glance.
Nagyker ore. See Nagyagite.
Nail-headed copper ore. See Chalcocite.
Nail-headed spar. See Calcite.
Nakrit. See Kaolinite.
NAMAQUALITE, *Church.* $(Cu, Ca, Mg)_4Al_3(OH)_{14}+4 H_2O$.
Nantauquite. See Nantokite.
NANTOKITE, *Breit.* $CuCl_2$. Isometric. Kupferchlorür; nantauquite; nantoquite, *Herm.*
Nantoquite. See Nantokite.
Naphtadile. See Neft-Gil.
Naphtdachil. See Neft-Gil.
Naphte. See Naphtha.
Naphteine. See Hatchettite.
NAPHTHA. C_nH_{2n+2}. *Νάφθα Strabo.*, Barbadoes tar; bergöl, *Germ.*; bergtheer, flussiges, *Haus.*; bitume liquide, *Fr.*; bitume liquide blanchâtre, *H.*; bitume liquide brun, *H.*; bitumène liquide noirâtre, *H.*; bitumen liquidum candidum, *Plin.*; erd-

NAPHTHA—Continued.
öl, *Germ.*; fossil oil, *James.*; Genesee oil; huile minérale commune, *Brochant*; huile de naphte; huile de pétrole; kerosene; liquidum bitumen, nunc vocatur petroleum, *Agric.*; mineral oil, *Phillips*; naphte, *Beud.*; naphtha, *Plin.*; naphtha flos bituminis, *Agric.*; pétrole, *Brochant*; petroleum; rock oil; Seneca oil; steinöl, *Germ.*
Naphthadil. See Neft-Gil.
Naphtha flos bituminis. See Naphtha.
NAPHTHALIN. $C_{10}H_8$. Orthorhombic.
Naphthaline. See Scheererite.
Napoleonite. See Amphibole.
Napthaline résineuse prismatique. See Scheererite.
Nasumite. See Næsumite.
Nasturan. See Uraninite.
Native alloy. See Amalgam.
Native alum. See Kalinite.
Native amalgam. See Amalgam.
Native antimony. See Antimony.
Native argile. See Aluminite.
Native arsenic. See Arsenic.
Native bismuth. See Bismuth.
Native boracic acid. See Sassolite.
Native borax. See Sassolite.
Native calx of arsenic. See Arsenolite and Pharmacolite.
Native carbonate of alumina and lime. See Hovite.
Native ceruse. See Cerussite.
Native cinnabar. See Cinnabar.
Native coke. See Mineral coal.
Native copper. See Copper.
Native Epsom salt. See Epsomite.
Native glass of lead. See Cerussite.
Native gold. See Gold.
Native hydrate of magnesia. See Brucite.
Native iridium. See Iridosmine.
Native iron. See Iron.
Native lead. See Lead.
Native lime. CaO.
Native magnesia. See Brucite and Magnesite.
Native magnet. See Magnetite.
Native mercury. See Mercury.
Native mineral carbon. See Mineral coal.
Native minium. See Minium.
Native muriate of iron. See Pyrosmalite.

Moroxite. See Apatite.
Morpholites of Sweden. See Calcite.
Morvenite. See Harmotome.
MOSANDRITE, *Erdm.* $Ca_3Ce_4(Si, Ti)_5O_{19}$. Monoclinic.
Moscovite. See Muscovite.
Moscovy-glass. See Muscovite.
Moss agate. See Quartz.
Mossottite. See Aragonite.
Mother of diaspore. See Talc, Pinite, and Pyrophyllite.
MOTTRAMITE, *Roscoe.* 5 (Cu, Pb)V_2O_6+2 H_2O. Crystalline.
Mountain blue. See Azurite and Chrysocolla.
Mountain cork. See Amphibole and Pilolite.
Mountain crystal. See Quartz.
Mountain green. See Chrysocolla and Malachite.
Mountain leather. See Amphibole and Pilolite.
Mountain meal. See Opal.
Mountain paper. See Amphibole.
Mountain pasteboard. See Amphibole.
Mountain silk. See Amphibole.
Mountain soap. See Halloysite.
Mountain tallow. See Hatchettite.
Mountain tar. See Naphtha.
Mountain wood. See Amphibole and Xylotile.
Mournite. See Labradorite.
Mourolite. CaC_2O_4, $CaCO_3$.
Moya. See Koth.
Muckite. $C_{20}H_{28}O_2$, or a mixture.
Mucks. See Mineral coal.
Müllerine. See Krennerite.
Müllerisches glas. See Opal.
Müllerite. See Krennerite.
Müsenite. See Linnæite.
Muldan. See Orthoclase.
Muller's glass. See Opal.
Mullicite. See Vivianite.
Mundic. See Pyrite.
Mundic, white. See Arsenopyrite.
Murchisonite. See Orthoclase.
Muriacite. See Anhydrite and Halite.
Muria fossilis pura. See Halite.
Muriated antimony. See Valentinite.
Muriate de chaux. See Chlorocalcite.
Muriate of ammonia. See Sal Ammoniac.
Muriate of copper. See Atacamite.
Muriate of iron. See Pyrosmalite.
Muriate of lead. See Mendipite.
Muriate of mercury. See Calomel.
Muriate of potash. See Sylvite.
Muriate of silver. See Cerargyrite.
Muriate of soda. See Halite.
Muriatic acid. See Hydrochloric acid.
Muriazit. See Anhydrite.
Muricalcite. See Dolomite.
Murindo. See Pyropissite.
MUROMONTITE, *Kerndt.* Near Allanite, but contains much Yttria. Amorphous.
Murrhina. See Quartz.
Mursinskite, von Kokscharow. Tetragonal crystals in topaz.
Muschel. See Calcite.
Muschliger feldspath. See Topaz.
Muschliger glanzkohle. See Mineral coal.
Muschliges phosphorblei. See Mimetite and Pyromorphite.
Muscoïde. See Pyromorphite.
MUSCOVITE, *Dana.* $H_2(K, Na)Al_3(SiO_4)_3$. Monoclinic. Biaxial mica; common mica; gæbhardite; glist; glimmer, *Kirwan*; glimmer, optisch-zweiaxiger; kaliglimmer; lamellar mica; laminated mica; mica palmé; moscovite; muscovy-glass; nacrite, *Thom.*; oblique mica; odinite; odite; phengite, *von Kob.*; plumose mica; potash mica, *Nicol*; prismatic mica; talcite, *Thom.*; talc granuleux, *Haüy*; talc mica, *Mohs*; verre du Muscovy; vitrum Muscovitum; zweiaxiger glimmer.

ADAMSITE, *Shep.*

FUCHSITE; Chromglimmer, pt., *Schafhautl*; chrome mica; mariposite.

MUSCOVITE ROCKS.

Didymite, *Schafh.*; amphilogyte; didinite; didrymite; mica schist.

Muscovy glass. See Muscovite.
Mushet stone. See Siderite.
Musite. See Parisite.
Mussite. See Pyroxene and Parisite.
Mussonite. See Parisite.
Muzite. See Parisite.
Myargyrite. See Miargyrite.
Myelin. See Andalusite.
Myloschine. See Miloschite.
Myrmalm. See Limonite.
Myrsen. See Sepiolite.
Mysorin. Anhydrous carbonate of copper.

Nacrite. See Kaolinite and Muscovite.
Nadeleisenerz. See Göthite.
Nadelerz. See Aikinite.
Nadelkohle. See Mineral coal.
Nadelstein. See Aragonite.
Nadelzeolith. See Natrolite.
NADORITE, *Flajolet.* $PbSbClO_2$. Orthorhombic.
Nasumite, Flajolet. Near Fahlunite. Nasumite, *Forbes.*
Nagiagererz. See Nagyagite.
Nagyagererz. See Nagyagite.
NAGYAGITE, *Haid.* $(Pb, Au)_4\ S\ Te_7$. Orthorhombic. Aurum galena, ferro et particulis volatibilibus mineralisatum, *Scopoli*; bitelluret of lead, *Thomson*; black sylvan ore, *James.*; black tellurium, *Phillips*; blättererz, *Karst.*; blättertellur, *Karst.*; elasmose, *Beud.*; elasmosine, *Huot*; foliated tellurium, *Allan*; gold of nagyag, *James.*; nagiagererz, *Wern.*; nagyagererz, *Wern.*; nagyker ore, *James.*, or gris lamelleux, *von Born*; prismatic black tellurium, *James.*; prismatic tellurium glance, *Mohs*; pyramidal tellurium glance, *Mohs*; silvane lamelleux, *Brochant*; tellure de plomb et d'or; tellure feuilleté; tellure natif auro-plombifère, *H.*; tellure plumbo-aurifère, *H.*; tellurium glance.
Nagyker ore. See Nagyagite.
Nail-headed copper ore. See Chalcocite.
Nail-headed spar. See Calcite.
Nakrit. See Kaolinite.
NAMAQUALITE, *Church.* $(Cu, Ca, Mg)_4Al_2(OH)_{14}+4\ H_2O$.
Nantauquite. See Nantokite.
NANTOKITE, *Breit.* $CuCl_2$. Isometric. Kupferchlorür; nantauquite; nantoquite, *Herm.*
Nantoquite. See Nantokite.
Naphtadile. See Neft-Gil.
Naphtdachil. See Neft-Gil.
Naphte. See Naphtha.
Naphteine. See Hatchettite.
NAPHTHA. C_nH_{2n+2}. *Νάφθα Strabo.*, Barbadoes tar; bergöl, *Germ.*; bergtheer, flussiges, *Haus.*; bitume liquide, *Fr.*; bitume liquide blanchâtre, *H.*; bitume liquide brun, *H.*; bitumène liquide noirâtre, *H.*; bitumen liquidum candidum, *Plin.*; erd-

NAPHTHA—Continued.
öl, *Germ.*; fossil oil, *James.*; Genesee oil; huile minérale commune, *Brochant*; huile de naphte; huile de pétrole; kerosene; liquidum bitumen, nunc vocatur petroleum, *Agric.*; mineral oil, *Phillips*; naphte, *Beud.*; naphtha, *Plin.*; naphtha flos bituminis, *Agric.*; pétrole, *Brochant*; petroleum; rock oil; Seneca oil; steinöl, *Germ.*
Naphthadil. See Neft-Gil.
Naphtha flos bituminis. See Naphtha.
NAPHTHALIN. $C_{10}H_8$. Orthorhombic.
Naphthaline. See Scheererite.
Napoleonite. See Amphibole.
Napthaline résineuse prismatique. See Scheererite.
Nasumite. See Naesumite.
Nasturan. See Uraninite.
Native alloy. See Amalgam.
Native alum. See Kalinite.
Native amalgam. See Amalgam.
Native antimony. See Antimony.
Native argile. See Aluminite.
Native arsenic. See Arsenic.
Native bismuth. See Bismuth.
Native boracic acid. See Sassolite.
Native borax. See Sassolite.
Native calx of arsenic. See Arsenolite and Pharmacolite.
Native carbonate of alumina and lime. See Hovite.
Native cerusse. See Cerussite.
Native cinnabar. See Cinnabar.
Native coke. See Mineral coal.
Native copper. See Copper.
Native Epsom salt. See Epsomite.
Native glass of lead. See Cerussite.
Native gold. See Gold.
Native hydrate of magnesia. See Brucite.
Native iridium. See Iridosmine.
Native iron. See Iron.
Native lead. See Lead.
Native lime. CaO.
Native magnesia. See Brucite and Magnesite.
Native magnet. See Magnetite.
Native mercury. See Mercury.
Native mineral carbon. See Mineral coal.
Native minium. See Minium.
Native muriate of iron. See Pyrosmalite.

Native nickel. See Millerite.
Native palladium. See Palladium.
Native paraffine. See Ozocerite.
Native platinum. See Platinum.
Native Prussian blue. See Vivianite.
Native quicksilver. See Mercury.
Native red iron vitriol. See Botryogen.
Native red iron vitriol of Fahlun. See Botryogen.
Native salt of phosphorus. See Stercorite.
Native sedative salt. See Sassolite.
Native selenium. See Selenium.
Native silver. See Silver.
Native soda. See Trona.
Native steel. See Iron.
Native sulphate of copper and iron. See Pisanite.
Native sulphur. See Sulphur.
Native sulphuric acid. See Sulphatite.
Native sylvan. See Tellurium.
Native talc earth. See Magnesite.
Native tellurium. See Tellurium.
Native tin. See Tin.
Native vermillion. See Cinnabar.
Native vitriol of lead. See Anglesite.
Natochikite, Ramm. Clay from Natochika.
Natrikalite, Scachi. (Na, K)Cl.
Natriumalaun. See Mendozite.
Natroborocalcite. See Ulexite.
Natrocalcit. See Gay-Lussite.
Natrolite. See Ekebergite.
NATROLITE, *Jameson.* $Na_2Al_2Si_3O_{10}+2\,H_2O$. Orthorhombic. Bergmannite, *Schum.*; brevicite, *Strom.*; crocalcite, *Estner*; fargite, *Heddle*; faserzeolith, *Wern.*; fasriger zeolith; feather zeolite; fibrous zeolite; galactite; galaktit, *Haid.*; höganite, *Selb*; krokalith, *Estner*; lehuntite, *Thom.*; mealy zeolite; mehl-zeolith; mesotype, *Phillips*; mesotype compacte; nadelzeolith, *Wern.*; natrolith, *Klapr.*; natron-mesotype, needle stone, *Jameson*; needle zeolite, *Jameson*; œdelite; palæonatrolite, *Scheer.*; palæonatrolith, *Scheer.*; prismatic kouphone spar, *Mohs*; radiolite, *Esm.*; radiolith, *Esm.*; savite, *Sella*; soda mesotype; spreustein, *Wern.*; zeolit, pt., *Cronst.*; zeolite albus fibrosus, capillaris, etc., *von Born*; zéolite fibreuse; zeolites crystallisatus prismaticus, capillaris, *Cronst.*; zéolithe en aiguilles; zéolithe radiée.

IRON NATROLITE: Eisennatrolith; ferruginous natrolite.

Natrolite d'Hesselkulla. See Ekebergite.
Natrolite ferrugineuse. See Natrolite.
Natrolite, iron. See Natrolite.
Natrolithe. See Natrolite.
Natron. See Trona and Thermonatrite.
NATRON, *Karsten.* $Na_2CO_3+10\,H_2O$. Monoclinic. Alkali mineral, *Broch.*; alkali minéral acré, *Berg.*; carbonate of soda, *Brochant*; hemiprismatic natron salt, *Mohs*; mineral alkali, *Kirwan*; natron, kohlensaures; natron salt, *Mohs*; netrum, *ancients*; nitre, *ancients*; prismatic natron salt, *Mohs*; soda; soude; soude blanche d'Égypte, *de Lisle;* soude carbonatée, *H.*
Natron, kohlensaures. See Natron and Thermonatrite.
Natron salt. See Natron.
Natronalaun. See Mendozite.
Natronchabasit. See Gmelinite.
Natronfeldspath. See Albite.
Natronglimmer. See Paragonite.
Natronkalkborat. See Ulexite.
Natronkalk-feldspath. See Andesite, Labradorite, and Oligoclase.
Natronmesotyp. See Natrolite.
Natronnitre. See Soda Nitre.
Natronsalpeter. See Soda Nitre.
Natronspodumen. See Oligoclase.
Natronsulfat. See Thenardite.
NATROPHITE, *Pisani.* $Na_2P_2O_7+H_2O$.
Natrosiderite. See Acinite.
Natrum von Tripole. See Trona.
Natürlich turpet. See Calomel.
Natürliche alaunerde. See Collyrite.
Natürliche smalt. See Lazulite.
Natürlicher salmiak. See Sal ammoniac.
Natürlicher vitriol. See Melanterite.
Natürliches amalgam. See Amalgam.
Natürliches Berlinerblau. See Vivianite.
Natürliches bittersalz. See Mirabilite and Epsomite.
Natürliches mineralisches alkali. See Thermonatrite.
Natural cornals, Native.

NAUMANNITE, *Haid.* $(Ag_2,Pb)Se$. Isometric. Selenic silver; séléniure d'argent, *Beud.*; seleniuret of silver, *Phillips*; selensilber, *Rosg.*; selensilberglanz, *Germ.*

Naxium. See Corundum.

Naxium ex Armenia. See Corundum.

Necrolites.

Necronite. See Orthoclase.

Nectic quartz. See Opal.

Needle ironstone. See Göthite.

Needle ore. See Aikinite.

Needle spar. See Aragonite.

Needle stone. See Natrolite and Thomsonite.

Needle tin. See Cassiterite.

Needle zeolite. See Natrolite and Scolecite.

Nefedieffite, Pusirewsky. $H_4MgAl_2Si_5O_{16}$. Amorphous. Nefiedieffite.

Nefelina. See Nephelite.

Neftdegil. See Neft-Gil.

Neft-Gil, Fritzsche. Near Zietrisekite. Naphtadile; naphtdachil; naphthadil, *Kenng.*; neftdegil, *Hermann*; nephatil.

Nehósheth. See Copper.

Negrillo. See Stephanite a Argentite.

Nekronite. See Orthoclase.

Nemalite. See Brucite.

Nemalith. See Brucite.

Némate. See Pumice.

Neochrysolite. See Chrysolite.

Neociano. See Neocyanite.

Néoctèse. See Scorodite.

Neocyanite, Scacchi. Anhydrous copper silicate. Monoclinic. Neociano.

NEOLITE, *Scheerer.* $(H_6, Mg_3, Al_2)(SiO_3)_3$. Basalt speckstein; neolith.

Neolith. See Neolite.

Néopètre. See Quartz.

Néoplase. See Botryogen and Nickel arsénié.

NEOTOCITE. $(R''_3, R'''_2)_2(SiO_4)_3+20$ to 30 per centum Mn_2O_3. Amorphous. Neotockite; neotokit. *Nord.*; stratopeit, *Igels.*; vattenhaltigt manganoxid silikat, *Bahr*; wittingit, *Nord.*

Neotockit. See Neotocite.

Neotokite. See Neotocite.

Neotype. See Calcite.

Nepaulite, Piddington. Bi, Fe, Cu, Ce, La, Di, Si_2O_3, CO_2.

Nephalite. See Hatchettite.

Nephatil. See Neft-Gil.

Nepheline. See Nephelite.

NEPHELITE, *Dana.* $(Na,K)_2Al_2(SiO_4)_2$. Hexagonal. Basaltes crystallisatus albus crystallis prismaticis, *von Born*; beudanite, *Covelli*; beudantine; cavolinite, *Mont.* and *Cov.*; davina, *Mont.* and *Cov.*; davyne; ditröyte, *Tscher*; lithrodes nefelina; pseudonepheline, *Fl. Bellevue*; pseudosommite, *Fl. Bellevue*; rhomboidal felspar, *James.*; rhombohedral felspar, *Mohs*; sechsseitige weisse durchsichtige schörlsäuler mit oder ohne pyramide an der spitze, etc., *Ferber*; schorl blanc hexagonal du Vésuve, *Ferber*; sommite, *Dela.*

ELÆOLITE: Elæolith, *Klapr.*; fettstein, *Wern.*; phonite, *Des Cloiz.*; pierre grasse, *Haüy*; wernerite, muscheliger, *Haus.*

Nepholite. See Chiolite.

Nephrite. See Amphibole, Zoisite, Jadeite, and Serpentine.

Nephtalite. See Hatchettite (?).

Nero antico. See Calcite.

Nertschinkillite. See Halloysite.

Nertschinskite. See Halloysite.

Nether. See Trona.

NEUDORFITE, *von Schröckinger.* $C_{18}H_{28}O_2$.

Neukirchit. See Manganite.

Neurolite, Thomson. Near Pinite. Neurolith.

Neurolith. See Neurolite.

Neuseelandocker. See Limonite.

Neutralt flussspatssyradt cerium. See Fluocerite.

Neutraler kieselsaurer hydrotalc. See Talcoid.

Neutrales flusssaures cerer. See Fluocerite.

Neutrales schwefelsaures eisenoxyd. See Coquimbite.

Neutral fluate of cerium. See Fluocerite.

NEWBERYITE, *vom Rath.* $H_2Mg_2(PO_4)_2+6\,H_2O$. Orthorhombic.

Newjanskite. See Iridosmine.

Newkirkite. See Manganite.

Newportite. See Phyllite.

Niccochromite, Shep. Canary-yellow coat on Zaratite.

Niccoliferous pyrite. See Pyrite.

NICCOLITE. Ni_2As_2. Hexagonal. Arseniet of nickel, *Thomson*; arsenical

NICCOLITE—Continued.
nickel, *Mohs*; arsenicum sulphure et cupro mineralisatum, *Wall.*; arsenik-nickel; arsenischer pyrrotin, *Breit.*; arsennickel; copper nickel, *James.*; cuprum min. arsen. fulvum, *Linn.*; cuprum nicolai, *Woodward*; false copper, *Hiärne*; kupfernickel, *Hiärne*; mine de cobalt arsenical tenant cuivre, *Sage*; niccolum ferro et cobalto arsenicatis et sulphuratis mineralisatum, *Cronst.*; niccolum nativum, *Bergm.*; nickel arsenide; nickeline; nickeline rouge; nicolo de cobre, *Herrg.*; prismatic nickel pyrites; pyrrotin, *Breit.*; rothnickelkies; sulphuretted nickel.

Niccolum calciforme. See Annabergite.

Niccolum ferro et cobalto arsenicatus et sulphuratis mineralisatum. See Gersdorffite and Niccolite.

Niccolum nativum. See Niccolite.

Niccolum vitriolatum. See Morenosite.

Nickel and cobalt, arsenate of. See Forbesite.

Nickel and iron, sulphuret of. See Pentlandite.

Nickel, antimonial. See Breithauptite.

Nickel antimonié sulfuré. See Ullmannite.

Nickel, antimonio-arsenical. See Ullmannite.

Nickel arsenate. See Annabergite and Cabrerite.

Nickel, arsenical. See Niccolite and Gersdorffite.

Nickel arsenic glance. See Gersdorffite.

Nickel arsenical blanc. See Rammelsbergite.

Nickel arsenide. See Niccolite, Rammelsbergite, and Smaltite.

Nickel arsénié, Berzelius. $Ni_2As_2O_3+18H_2O$. Black nickel; néoplase (?); nickel mulm; nickel oxydé noir; schwarzer nickel.

Nickel arsénio-sulfuré. See Gersdorffite.

Nickel bismuth glance. See Grünauite.

Nickel blanc. See Gersdorffite.

Nickel-bloom. See Annabergite.

Nickel bournonite See Ullmannite.

Nickel carbonate. See Zaratite.

Nickel, copper. See Niccolite.

Nickel éclatant. See Gersdorffite.

Nickel, emerald. See Zaratite.

Nickel émeraude. See Zaratite.

Nickel glance. See Gersdorffite.

Nickel, green. See Annabergite.

Nickel gris. See Ullmannite.

Nickel gymnite. See Genthite.

Nickel hydrate. See Zaratite.

Nickel hydrocarbonate. See Zaratite.

Nickel hydrosilicate. See Pimelite.

Nickel linnæite. See Linnæite.

Nickel natif. See Millerite.

Nickel ochre. See Annabergite.

Nickel ocre. See Annabergite.

Nickel oxide. See Bunsenite.

Nickel oxydé. See Bunsenite.

Nickel oxydé noir. See Nickel arsénié.

Nickel protoxide. See Bunsenite.

Nickel silicate. See Alipite, Genthite and Pimelite.

Nickel stibine. See Ullmannite.

Nickel sulfuré. See Millerite.

Nickel sulfuré bismuthifère. See Grünauite.

Nickel sulphate. See Morenosite.

Nickel sulphide. See Millerite.

Nickel sulphuret. See Millerite.

Nickel, tribasic arsenate. See Forbesite and Xanthiosite.

Nickel vitriol. See Morenosite.

Nickel, white. See Rammelsbergite and Smaltite.

Nickelantimonglanz. See Ullmannite.

Nickelantimonkies. See Xanthiosite.

Nickelarsenblüthe. See Annabergite.

Nickelarsenikglanz. See Gersdorffite.

Nickelarsenikkies. See Gersdorffite.

Nickelarsenkies. See Gersdorffite

Nickelbeschlag. See Annabergite.

Nickelbournonit. See Bournonite and Ullmannite.

Nickelerz. See Gersdorffite and Xanthiosite.

Nickelglanz. See Gersdorffite.

Nickeliferous calamine. See Smithsonite.

Nickeliferous gray antimony. See Ullmannite.

Nickeline. See Niccolite.

Nickeline blanche. See Rammelsbergite and Smaltite.

Nickeline rouge. See Niccolite.

Nickelkies. See Millerite.

Nickelmulm. See Nickel arsénié.

Nickelocher. See Annabergit

Nickelocker. See Anna

Nickeloxydh

ydul. See Bunsenite.
iaragd. See Zaratite.
iessglanzerz. See Ullmannite.
iessglaserz. See Ullmannite.
ktril. See Morenosite.
ismuthglanz. See Grünauite.
See Quartz.
e cobre. See Niccolite.
e, *Shep.* Ni_2O_3. Isometric.
te. See Pentlandite.
ein. See Amphibole and Jade-

CITE, *Hornstein.* $(Fe, Mg)_2Si_3$ H_2O. Amorphous.
See Rutile.
See Columbite.
. See Chodneffite.
. See Chodneffite.
e. NH_4NO_3.
le chaux. See Nitrocalcite.
le potasse. See Nitre.
f lime. See Nitrocalcite.
f magnesia. See Nitromagne-

f potash. See Nitre.
. See Soda nitre.
ee Natron.
Kirwan. KNO_3. Orthorhombic.
i végétal nitré, *Berg.*; kalisal- *Haus.*; nitrate of potash, *Phil-* itre salt; potasse nitratée; pot- itrate; prismatic nitre, *James.*; ntic nitre salt, *Mohs*; salpeter, ; saltpeter; saltpetre.
caire. See Nitrocalcite.
bique. See Soda nitre.
t. See Nitre.
ARITE, *Groth.* $Ba(NO_3)_2$+ Isometric.
ALCITE, *Shep.* $Ca(NO_3)_2$+ Calcinitre, *Huot*; chaux ni- , *Haüy*; kalksalpeter, *Haus.*; itrate; nitrate de chaux, *Beud.*; e of lime, *Phillips*; nitre cal- wall saltpetre; salêptre ter-

brure de soude. See Soda nitre.
EN. N. Azote; stickstoff.
LAUBERITE, *Schwartzem-* $4 Na_2SO_4$. $12 NaNO_3$+$5 H_2O$.
IAGNESITE, *Shep.* $Mg(NO_3)_2$. esia nitrate; magnesia-salpeter; ésie nitratée, *Fr.*; magnésie of; nitrate of magnesia,

Nitrum. See Natron, Sal ammoniac, and Thermonatrite.
Noble hornblende. See Amphibole.
Noble opal. See Opal.
Noble serpentine. See Serpentine.
Noble tourmaline. See Tourmaline.
Nocerin. See Nocerite.
Nocerina. See Nocerite.
NOCERITE, *Dana.* $(Ca, Mg)F_2$. (Ca, Mg)O. Hexagonal. Nocerin; nocerina, *Scacchi.*
Nodular iron ore. See Limonite.
Nodular pyrites. See Pyrite.
NOHLITE, *Nord.* $(Y, Fe, Ca, U)_6(Cb O_4)_4$+$3 H_2O$.
Nolascite. See Galenite.
NONTRONITE, *Berthier.* $Fe_2(SiO_3)_3$+ $5 H_2O$.
Noralite. See Amphibole.
Nordenskioldine, Brögger. $CaO, SnO_2, B_2 O_3$.
Nordenskioldite. See Amphibole.
Nordmarkite. See Staurolite.
Normalin. See Phillipsite.
Norwich mineral. See Triphylite.
Nosean. See Nosite.
Nosiane. See Nosite.
Nosin. See Nosite.
NOSITE, *Dana.* $Na_2Al_2(SiO_4)_2$+Na_2SO_4. Isometric. In ripis lapillos elegantiores et sapphiros reperire est, *Freherus*; haüyne pt.; nosean; nosian, *Klapr.*; nosin; spinellan, *Haüy*; spinelline.
Notite. See Palagonite.
NOUMEAITE, *Liversidge.* (Mg, Ni)Si O_3+nH_2O. Noumeite; numeite.
Noumeite. See Noumeaite.
Novaculite. See Quartz.
Nova mina. See Topaz.
Nova minera plumbi. See Crocoite.
Numeite. See Noumeaite.
Nummulitic marble. See Calcite.
Nussierite. See Pyromorphite.
Nuttal. See Sphalerite.
Nuttalite. See Wernerite.
Oblique mica. See Muscovite.
Oblique prismatic arseniate of copper. See Clinoclasite.
Obsidian. See Orthoclase.
Obsidienne capillaire. See Pele's hair.
Obsidienne du Cantal. See Orthoclase.
Obsidienne perlée. See Orthoclase.
Occhio di gatto. See Quartz.
Occhio di Pernice. See Leucite.

Occidental agate. See Quartz.
Occidental chalcedony See Quartz.
Occidental diamond. See Quartz.
Occidental topaz. See Quartz.
Occidental turquois. See Odontolite.
Ochra. See Hematite.
Ochra cobalti rubra. See Erythrite.
Ochra cobaltum nigra. See Wad.
Ochra nativa. See Limonite.
Ochra niccoli. See Annabergite.
Ochra rubra. See Hematite.
Ochran, Breit. Near Halloysite. Plinthite, *Thom.*
Ochre. See Limonite.
Ochre, antimony. See Cervantite and Stibiconite.
Ochre, bismuth. See Bismite.
Ochre, black, Weale.
Ochre, brown. See Limonite.
Ochre, cadmium. See Greenockite.
Ochre, chrome. See Pimelite.
Ochre, iron. See Hematite.
Ochre, molybdic. See Molybdite.
Ochre of iron, brown. See Limonite.
Ochre of iron, red. See Hematite.
Ochre, plumbic. See Massicot.
Ochre, red. See Hematite and Turgite.
Ochre, tantalic. See Tantalic ochre.
Ochre, telluric. See Tellurite.
Ochre, tungstic. See Tungstite.
Ochre, uranic. See Uraconite.
Ochre, vitriol. See Glockerite.
Ochre, yellow. See Limonite.
Ochreous iron ore. See Hematite and Limonite.
Ochreous magnetite. See Magnetite.
Ochreous wad. See Wad.
Ochriger brauneisenstein. See Limonite.
Ochroite. See Cerite.
Ochry wad. See Wad.
Ockergelb. See Limonite.
Ocre. See Limonite.
Ocre de nickel. See Zaratite.
Ocre d'Uran. See Uraconite.
Ocre martiale brune. See Limonite.
Ocro de hierro pardo. See Limonite.
Ocro de manganesa. See Psilomelane.
Octaedrisches kupfererz. See Cuprite.
Octaedrisches phosphorkupfer. See Libethenite and Olivenite.
Octaedrisches titaneisen-oxyd. See Iserite.
Octaëdrit. See Octahedrite.
Octaèdrite. See Octahedrite.
Octahedral alum salt. See Kalinite.
Octahedral ammoniac salt. See Sal ammoniac.
Octahedral arseniate of copper. See Liroconite.
Octahedral arsenic acid. See Arsenolite.
Octahedral basaltine. See Pyroxene.
Octahedral bismuth. See Bismuth.
Octahedral chrome ore. See Chromite.
Octahedral cobalt pyrites. See Smaltite.
Octahedral copper. See Copper.
Octahedral copper ore. See Cuprite.
Octahedral copper pyrites. See Bornite and Chalcopyrite.
Octahedral corundum. See Gahnite and Spinel.
Octahedral diamond. See Diamond.
Octahedral fluor haloid. See Fluorite.
Octahedral iron. See Iron.
Octahedral iron ore. See Magnetite.
Octahedral kouphone spar. See Sarcolite.
Octahedral oxide of titanium. See Octahedrite.
Octahedral palladium. See Palladium.
Octahedral titanium ore. See Pyrochlore.
OCTAHEDRITE, *Jameson.* TiO_2. Tetragonal. Anatase, *Haüy* dauphini octaëdri octaèdrite, *Saus.*; octahedral oxide of titanium; oktaëdrit, *Wern.*; oisanite, *Dela.*; schorl bleu; schorl bleu ndigo, *Bourn.*; schorl octaèdre rectangulaire, *Bourn.*; titane anatase, *H.*; titane oxydé, *H.*; titanic acid, *Thom.*
Oculus mundi. See Opal.
Oculus piscis. See Apophyllite.
Odalite. See Sodalite.
Odinite. See Muscovite.
Odite. See Muscovite.
Odontolite. Bone colored by Fe or Cu salts. Bone turquois; occidental turquois turquois de nouvelle roche.
Œdélite. See Natrolite.
Œil de chat. See Crocidolite, Chrysoberyl, Gypsum, and Quartz.
Œil de perdrix. See Leucite.
ŒLLACHERITE, *Dana.* $H_6R_3Al_2(SiO_4)_6$. Crystalline. Margarite, from Pfitschthal, *Œllacher.*
Oligoclase. See Orthoclase.
See (Reptadi

Œrstedite, Forchhammer. Near Zircon. Œrsdedtite.

Ogcoite. See Prochlorite.

Ogkoit. See Prochlorite.

Oisanite. See Epidote and Octahedrite.

Okenit, asbestartiger. See Wollastonite.

OKENITE, *von Kobell.* $CaSi_2O_5+2H_2O$. Orthorhombic. Bordite, *Adam*; dysclasite, *Connel*; dysklasite; zéolite tenace; zéolithe tenace.

Okenite of Disco Islands, Greenland. See Pectolite.

Oktaëdrit. See Octahedrite.

Oktibbehite, Shep. FeNi.

Olafite. See Albite.

OLDHAMITE, *Mask.* CaS chiefly. Isometric.

Oligist iron. See Hematite.

OLIGOCLASE. Ab_5An_1 to Ab_3An_1. Ab = Albite; An = Anorthite. Triclinic. Aventurine, hafnefiordite; hafnefjordit, *Forchh.*; havnefjordit; kalknatronfeldspath; kalkoligoklas, *Forchh.*; lunaire; mondstein; moonstone; natronkalkfeldspath; natron spodumene, *Berz.*; oligoklas, *Breit.*; pierre du soleil; soda lime feldspar; soda spodumene; sun stone.

Oligoclase albite. See Albite.

Oligonite. See Siderite.

Oligon spar. See Siderite.

Oligonspath. See Siderite.

Olive copper ore. See Olivenite.

Olive malachite. See Olivenite.

Olive quartz. See Quartz.

Olivenchalcit. See Libethenite.

Olivenerz. See Olivenite, Libethenite, and Pharmacosiderite.

OLIVENITE, *Jameson.* $Cu_3As_2O_8$. Cu $(OH)_2$. Orthorhombic. Acicular arseniate of copper, *Allan*; acicular olivenore; arseniksaures kupfererz, *Klapr.*; copper arseniate; cuivre arséniaté; cuivre arséniaté en octaèdres aigus, *Bourn.*; cuivre arséniaté prismatique; octaedrisches phosphorsaures kupfer; olive copper ore, *Kirw.*; olive-green copper ore, *Raskl.*; olive malachite, *Mohs*; olivenerz, *Wern.*; olivenkupfer; olivin ore pharmocolzit, *Haus.*; pharmakochalzit, *Haus.*; phosphorsaures kupferoxyd; prismatic arseniate of copper, *Bourn.*; prismatic olive malachite, *Mohs.*

OLIVENITE—Continued.

WOOD COPPER: Holzkupfererz; wood arseniate.

Olivenkupfer. See Olivenite.

Olivine. See Chrysolite.

Olivinore. See Olivenite.

Olivinfels. See Chrysolite.

Olivinoïde. See Chrysolite.

Ollaris. See Serpentine and Talc.

Ollite. See Talc.

Olyntholite. See Garnet.

Ommailouros. See Quartz.

Omphacite. See Pyroxene.

Omphazite. See Pyroxene.

Onchosine. See Pinite.

Oncosin. See Pinite.

Onegite. See Göthite.

Onicolo. See Quartz.

Onkosin. See Pinite.

Onofrin. See Onofrite.

ONOFRITE, *Haid.* 4 HgS. HgSe. Massive. Merkurglanz, *Breit.*; onofrin; selenide of mercury; selenschwefelquicksilber, *H. Rose*; sulphoselenide of zinc and mercury, *Del Castillo.*

Ontariolite. Shep. Near Wernerite.

Onychites. See Calcite.

Onyx. See Quartz and Calcite.

Onyx agate. See Quartz.

Onyx marble. See Calcite.

Oölite. See Calcite, Hematite, and Siderite.

Oolith. See Calcite.

Oolithischer kalkstein. See Calcite.

Oolithisches eisenerz. See Hematite.

Oösite. See Pinite.

Opacite, Vogelsang. Black grains in rocks.

OPAL. SiO_2 with 3—13 per centum H_2O. Amorphous. Common opal; gemeiner opal; hydrate de silice; indivisible quartz, *James.*; mangan-opal; opale; opalus; pœderos, *Pliny*; quartz hyalin concrétionné, *H.*; quartz résinite hydraté; quartz, untheilbarer, *Mohs*; silex résinite; stillolite; uncleavable quartz, *Haid.*; zeasite.

BLACKMORITE, *Peale.*

CACHOLONG: Calcédoine alterée, *de Lisle*; cascholong, *B.* and *M.*; kascholong; kaschtschilon; quartz agathe cachalong, *H.*; perlmutter-opal, *Karst.*; silex cachalong, *Brong.*

OPAL—Continued.

FIORITE: Calcédoine volcanique, *Nonnull*; fire stone; geyserite, *Dela.*; kieselsinter; kieseltuff, *Klapr.*; michaelite, *Webster*; michaellite; opalartiger kieselsinter, *Haus.*; pealite; pearlite; pearl sinter; perlite; perlsinter; quartz agathe concrétionnée thermogène, *H.*; quartz thermogène; santilite siliceous sinter; silica rock; viandit.

FIRE OPAL: Feuer-opal, *Humb.*; opale arlequin; opale couleur de feu; opale de feu; pyrophane; sun opal.

FLOAT STONE: Cellular quartz; decomposed flint; nectic quartz; quartz nectique, *H.*; schwimmkiesel, *Haus.*; schwimmstein; silex nectique; spongiform quartz; swimming flint; swimming quartz.

FORCHERITE: Auhhorn.

GIRASOL, *de Lisle*: Opale bleuâtre, *Dela.*

HYALITE, *Wern.*: Glasopal, *H.*; gummistein, *Blumen.*; hialith; hyalith; müller's glass; müllerisches glas; silice gélatineuse.

HYDROPHANE: Lapis mutabilis; oculus mundi, *Kirw.*; quartz résinite hydrophane, *H.*; silex hydrophane, *Brong.*; water opal; wettauge.

JASP-OPAL, *Karst.*: Eisenopal, *Haus.*; ferruginous opal; opal jasper; opaljaspis.

MENILITE, *Saus.*: Leberopal, *Karst.*; liver opal; melinite; pechstein de Ménil-Montant, *Delarbre* and *Quinquet*; pestene de Ménil-Montant, *Petr.*; pitchstone of Ménil-Montant; quartz résinite ménilite; quartz résinite subluisant brunâtre.

OPAL AGATE.

PRECIOUS OPAL: Edler opal; noble opal; opale noble, *H.*; oriental opal; quartz résinite.

RESIN OPAL: Pechopal; pechstein, infusible; pitch opal; wachsopal; wax opal.

SEMI OPAL: Demi opal; halbopal.

TRIPOLITE: Alumocalcite, *Breit.*; argiles à polir; bergmehl; earthy tripolite; farina fossilis; guhr siliceux, *Klapr.*; infusorial earth; kieselguhr; kieselmehl; klebschiefer; mountain meal; opale terreuse; polierschiefer; polishing slate; quartz aluminifère

OPAL—Continued.

Tripolien; quartz terreux; randanite; sangkiesel terpizit; terra Tripolitana; thermantide Tripoléenne, *H.*; tripel; tripelschiefer; tripoli; Tripoli slate; trippel.

WOOD OPAL: Bois pétrifié; holzopal; ligniform opal; lithoxylon; opalized wood; quartz agathe xyloïde; quartz résinite xyloïde; woodstone.

Opal agate. See Opal.

Opal allophane. See Schrötterite.

Opal, edler. See Opal.

Opal, ferruginous. See Opal.

Opal, fire. See Opal.

Opal, jasper. See Opal.

Opal, ligniform. See Opal.

Opal, precious. See Opal.

Opal, semi. See Opal.

Opalartiger kieselsinter. See Opal.

Opale. See Opal.

Opale arlequin. See Opal.

Opale bleuâtre. See Opal.

Opale couleur de feu. See Opal.

Opale de feu. See Opal.

Opale noble. See Opal.

Opale terreuse. See Opal.

Opalescent chrysolite. See Chrysoberyl.

Opalescent sapphire. See Corundum.

Opaline allophane. See Schrötterite.

Opaline lenzinite. See Halloysite.

Opalisirinder feldspath. See Orthoclase.

Opaljaspis. See Opal.

Opalized wood. See Opal.

Opalus. See Opal.

Operment. See Orpiment and Realgar.

Ophéret. See Lead.

Ophiolite. See Serpentine.

Ophite. See Serpentine.

Ophites. See Serpentine.

Opsimose. See Klipsteinite.

Or amalgamé. See Gold amalgam.

Or argentifère. See Gold.

Or blanc. See Sylvanite.

Or blanc de Colombie. See Gold amalgam.

Or blanc dendritique. See Sylvanite.

Or de chat. See Mica group.

Or d'Offenbanya. See Sylvanite.

Or graphique. See Sylvanite.

Or gris jaunâtre. See Krennerite.

Or gris lamelleux. See Nagyagite.

Or musif natif. See Stannite.

Or natif. See Gold.
Or palladié. See Gold.
ORANGITE, *Bergm.* $2\,Th_3SiO_4+3\,H_2O$. Tetragonal.
Oravitzite, Breit. Near Halloysite. Orawiczit.
Orawiczit See Oravitzite.
Ore of antimony. See Bournonite.
Ore of columbium. See Columbite.
Ore of tellurium. See Tetradymite.
Ore of titanium. See Göthite.
Orichalcite. See Aurichalcite.
Oriental alabaster. Calcite.
Oriental amethyst. See Corundum.
Oriental aquamarine. See Corundum and Topaz.
Oriental chalcedony. See Quartz.
Oriental chrysolite. See Chrysolite and Corundum.
Oriental emerald. See Beryl and Corundum.
Oriental garnet. See Garnet.
Oriental hyacinth. See Corundum and Zircon.
Oriental opal. See Opal.
Oriental peridot. See Corundum.
Oriental ruby. See Corundum.
Oriental sapphire. See Corundum.
Oriental topaz. See Corundum.
Orientalischer granat. See Garnet.
Orientalischer türkis. See Turquois.
Orientalisk rubin. See Corundum.
Origerfvite. See Gillingite.
Orileyite, Waldie. Fe, Cu, As, Sb, etc. Massive.
Orixite. See Oryzite.
Ornithite. See Metabrushite
Orobites. See Calcite.
Oropion. See Halloysite.
Oro pudre. See Gold.
ORPIMENT, *Wall.* As_2S_3. Orthorhombic. *Ἀρρενικόν, Theophr.*; *Ἀρσενικόν, Dioscor*; arrhenicum, *Plin.*; arsenic jaune, *Fr.*; arsenic sulfid; arsenic sulfuré; arsenic sulfuré jaune, *H.*; arsenicum flavum; auripigment; auripigmentum; gelb arsenblende; gelbes rauschgelb, *Germ.*; king's yellow; operment, *Agric.*; orpin; prismatoidal sulphur, *Mohs*; rauchgelb; rauschgelb, *Wall.*; realgar jaune, *Brochant*; risigallum, *Wall*; sulphuret of arsenic, *Phillips*; yellow sulphuret of arsenic; yellow orpiment, *Jameson.*
Orpiment, red. See Realgar.
Orpin. See Orpiment.
Orthite. See Allanite.
ORTHOCLASE, *Dana.* $K_2Al_2Si_6O_{16}$. Monoclinic. Album cinereum rubrum, *Wall.*; alkalifeldspath; common feldspar; cornubianite; fältspat; feldspar; feldspath; feldspath, gemeiner; feldstein, *Haus.*; felsite; felspar; felstone; feltspat; kalifeldspath; lodulite; orthoklas, *Breit.*; orthose, *H.*; potash feldspar; silex ex eo ictio ferri facile ignis elicitur ex cubis aliusque figuris intersectes constans, *Agric.*; spath fusible, *d'Arcet*; spatum pyrimachum.

CRYSTALLINE VARIETIES.

ADULARIA, *Jameson*: Adulaire, *Dela.*; Adular, *Breit.*; hecatolite; hecatolith; lunaire; mondstein, *Wern.*; moonstone, *Kirw.*; opalisirender feldspath, *Karst.*; pegmatolite, *Breit.*; pegmatolith; pierre de lune; pierre de lune argentine; valencianite. *Breit.*
CASSINITE.
COTTAITE, *Breit.*
DELAWARITE, *Lea.*
ERYTHRITE, *Thom.*
KRABLITE, *Forchh.*: Baulite.
LAZURFELDSPAR: Lazurfeldspath, *Nord.*
LENNILITE, *Lea.*
LOXOCLASE: Loxoklas, *Breit.*
MICROCLIN, *Breit.*: Microklin; mikroklin.
MULDAN, *Breit.*: Felsit von Mulda, *Breit.*
MURCHISONITE, *Phil.*
NECRONITE, *Hayden*: Nekronit.
PARADOXITE, *Breit.*: Felsit von Marienberg.
SANIDIN, *Nose*: Eisspath, *Wern.*; feldspath laminaire, *Allan*; glasiger feldspath, *Klapr.*; glassy feldspar; ice spar; petuntze; rhyacolite, *Rose*; rhyakolith; ryacolite; ryakolite; spath de glace.
SUNSTONE: Aventurine feldspar; heliolite, *Dela.*; pierre du Soleil; sonnenstein; spath étincillant, *Daub.*; spatum scintellans, *Cronst.*
Weissigite, Jenzsch

ORTHOCLASE—Continued.

COMPACT VARIETIES OR ORTHOCLASE FELSITE.

LEELITE, *Clarke.*

LEOPARDITE: Leopard stone.

PETROSILEX: Continuous feldspar, *Kirw.*; cornite; feldspath compacte; feldspath cubique, *Broch.*; fusible hornstone; hälle flinta, *Swedes*; hornstein, fusible; kornite; lapis cornens; paläiopetre, *Saus.*; petrilite, *Kirw.*; pétrosilex feuilleté; pierre à corne, *Broch.*; pierre carrée; silex corné, *Brong.*; splittriger hornstein.

AMORPHOUS VARIETIES.

OBSIDIAN, *Wern.*: Achat, Islandischer; bottle stone; bouteillenstein; fusible quartz, *Mar.*; Iceland agate; moldawite; pierre de gallinace; pseudochrysolite; quartz, empyrodoxer; sidermelane; volcanic enamel; volcanic glass.

PEARLSTONE: Feldspath nacré, *H.*; feldspath résinite; marekanite, *H.*; obsidienne; œquinolite; pearlaire; perlé; perlit; perlstein, *Wern.*; sphärolite; sphärolith; sphärulite; spherolite; spherulite.

PITCHSTONE: Cantalite; deodalite, *Rose*; fluolite; fluolith; lavre vitreux du Cantal; obsidienne du Cantal; pechstein; pechstein, fusible; péctrosilex résinite, *H.*; pierre de poix, *Broch.*; pissite, *Dela.*; pyrapholith, *Haus.*; rétinite, *H.*; rétinite du Cantal; stigmite.

Orthoclase-felsite. See Orthoclase.

Orthoïde. See Allanite.

Orthoklas. See Orthoclase.

Orthose. See Orthoclase.

Orthotomous kouphone spar. See Thomsonite.

Oryzite, Grattarola. Near Heulandite. Triclinic. Orizite.

Osbornite, Maskelyne. Gold-yellow octahedra in the Busti meteorite.

Oserskit. See Aragonite.

Osmelite. See Pectolite.

Osmelith. See Pectolite.

Osmide of iridium. See Iridosmine.

Osmiridium. See Iridosmine.

Osmiridium, dunkles. See Iridosmine.

Osmiridium, lichtes. See Iridosmine.

Osmium iridifère. See Iridosmine.

Osmium-iridium. See Iridosmine.

Osmiure d'iridium. See Iridosmine.

Osteocolla. See Calcite.

OSTEOLITE. $Ca_3(PO_4)_2$. Bone phosphate; earth apatite; osteolith.

Osteolith. See Osteolite.

Ostranite. See Zircon.

Ottrelite. See Phyllite.

Ottrelith. See Phyllite.

Ouatite. See Wad.

Ouralite. See Pyroxene.

Ouralorthite. See Allanite.

Outremer. See Lapis lazuli.

Ouvarovite. See Garnet.

Oviform limestone. See Calcite.

Owenite. See Thuringite.

Oxacalcite. See Whewellite.

Oxalate of ammonia. See Oxammite.

Oxalate de fer. See Humboldtine.

Oxalate of iron. See Humboldtine.

Oxalate of lime. See Thierschite.

Oxalite. See Humboldtine.

Oxalsaures eisen. See Humboldtine.

Oxammite, Shep. $(NH_4)_2C_2O_4$. Orthorhombic. Guanapite, *Raimondi*; oxalate of ammonia.

Oxiaverite. See Apophyllite.

Oxide blanc d'antimoine. See Valentinite.

Oxide chromique. See Chrome ochre.

Oxide de cobalt rouge. See Erythrite.

Oxide de manganèse couleur de rose. See Rhodochrosite.

Oxide de manganèse prismatique. See Manganite.

Oxide de manganèse pyramidal. See Hausmannite.

Oxide de mercure sulfuré rouge. See Cinnabar.

Oxide de zinc manganèsifère. See Zincite.

Oxide noir de manganèse. See Wad.

Oxide of antimony. See Valentinite and Cervantite.

Oxide of antimony, sulphuretted. See Kermesite.

Oxide of arsenic. See Arsenolite.

Oxide of bismuth. See Bismite.

Oxide of cerium. See Cerite.

Oxide of cerium, silicious. See Cerite.

Oxide of chrome. See Chrome ochre.

Oxide of cobalt. See Wad.

Oxide of cobalt, black. See Wad.

Oxide of columbium, ferruginous. See Columbite.
Oxide of columbium, yttrious. See Yttrotantalite.
Oxide of copper. See Cuprite, Melaconite, and Tenorite.
Oxide of copper, red. See Cuprite.
Oxide of iron. See Göthite, Hematite, Limonite, Magnetite, and Turgite.
Oxide of iron, brown. See Limonite.
Oxide of iron, magnetic. See Magnetite.
Oxide of iron, micaceous. See Hematite.
Oxide of iron, red. See Hematite.
Oxide of iron, specular. See Hematite.
Oxide of lead. See Mendipite, Minium, Plattnerite, and Massicot.
Oxide of lead, aluminous. See Plumbogummite.
Oxide of manganese. See Braunite, Hausmannite, Manganite, Psilomelane, and Pyrolusite.
Oxide of manganese, argentine. See Pyrolusite.
Oxide of manganese, cupreous. See Wad.
Oxide of manganese, silicious. See Rhodonite.
Oxide of molybdena. See Molybdite.
Oxide of nickel. See Annabergite.
Oxide of tin. See Cassiterite.
Oxide of tin, fibrous. See Cassiterite.
Oxide of titanium, ferruginous. See Menaccanite.
Oxide of titanium, octahedral. See Octahedrite.
Oxide of titanium, red. See Rutile.
Oxide of titanium, silico-calcareous. See Titanite.
Oxide of tungsten. See Tungstite.
Oxide of tungsten, calcareous. See Scheelite.
Oxide of tungsten, ferruginous. See Wolframite.
Oxide of tungsten, yellow. See Tungstite.
Oxide of uranium. See Uraninite.
Oxide of uranium, black. See Uraninite.
Oxide of uranium, green. See Torbernite.
Oxide of zinc. See Zincite.
Oxide of zinc, red. See Zincite.
Oxide of zinc, silicious. See Calamine.
Oxide rouge de titanium. See Rutile.
Oxide rouge de zinc. See Zincite.
Oxide zincique. See Zincite.
Oxychloride of copper. See Atacamite.
Oxychloride of lead. See Matlockite and Mendipite.
Oxychlorure de plomb. See Matlockite.
Oxyds and Oxydes. See Oxides.
Oxydulated copper. See Cuprite.
Oxydulated iron. See Magnetite.
Oxysulfuré de zinc. See Voltzite.
Oxysulphide of zinc. See Voltzite.
Ozarkite. See Thomsonite.
Ozocerite. See Chrismatite, Urpethite, and Zietrisikite.
OZOCERITE, *Phillips*. C_nH_{2n}. Baikerite, *Herm.*; cire fossile, *Fr.*; erdwachs, *Germ.*; native paraffin; ozokerit, *Glock*; parrafin; Rangoon tar.
Ozockerite. See Zietrisikite.
Ozokerit. See Ozocerite and Chrismatite.
PACHNOLITE, *Knop*. $NaCaAlF_6+H_2O$. Monoclinic. Pachnolith; pyroconite.
Pachnolite, dimetric. See Thomsenlite.
Pachnolith. See Pachnolite.
Pachnolith, tegragonaler. See Thomsenolite.
PACITE. FeS_2. $4\,FeAs_2$. Orthorhombic. Pazit, *Breit.*; rhombites pacites, *Breit.*
Paco. See Limonite.
Pacos. See Limonite.
Pædros. See Opal.
Pagodite. See Biharite, Pinite, Pyrophyllite, and Talc.
Paisbergite. See Rhodonite.
Pajsbergite. See Rhodonite.
Palæo-natrolith. See Natrolite.
PALAGONITE, *von Walters*. $(Mg, Ca, Na_2)_3(Al_2, Fe'''_2)_2Si_6O_{21}+nH_2O$. Amorphous. Hyblite; koréite, *Beud.*; korite; melanhydrit, *Krantz*; notite, *von Walters*; siderosilicate; trinacrite, *von Walters*.
Paläiopetre. See Orthoclase.
Paleo-natrolite. See Natrolite.
Paligorskite, von Ssaftschenkof. $(Mg, H_2)_8(Al_2)_5Si_{24}O_{69}+18\,H_2O$ (?). Palygorskite.
Palladinite. Palladium ochre; palladium oxide.

Palladium. See Allopalladium.

PALLADIUM, *Wollaston.* Pd, (Pt, Ir). Isometric. Native palladium; octahedral palladium, *Haid.*

Palladium aurifère. See Gold.

Palladium gold. See Gold.

Palladium ochre. See Palladinite.

Palladium oxide. See Palladinite.

Palladium sélénié. See Allopalladium.

Palygorskite. See Paligorskite.

Panabase. See Tetahedrite.

Pandermite. See Priceite.

Panno-di-morte. See Calcite.

Panther-agate. See Quartz.

Paper-coal. See Dysodile.

Papier-kohle. See Dysodile.

PARACHLORITE, *Schrauf.* $m[Al_4(SiO_4)_3]+n(R_2SiO_4)+pH_2O$.

Parachrose-baryte. See Siderite.

Paracolombite. See Menaccanite.

Paracolumbite. See Menaccanite.

Paradoxite. See Orthoclase.

Paraffin. See Ozocerite.

Paraffin coal. See Pyropissite.

Paraffin-kohle. See Pyropissite.

PARAGONITE, *Schafthaütl.* $H_4Na_2Al_6(SiO_4)_6$. Massive. Cossaite, *Gastaldi*; natronglimmer; pregattit; pregrattit, *Liebener.*

Parailmenite. See Menaccanite.

Paralogite. See Ekebergite.

PARALUMINITE, *Steinberg.* $2Al_2SO^6+15H_2O$. Massive.

PARANKERITE, *Boricky.* $CaFe(CO_3)_2+2(Ca, Mg)(CO_3)_2$.

Paranthine. See Paranthite and Wernerite.

PARANTHITE, *Dana.* $CaAl_2Si_2O_7$. Tetragonal. Paranthine, *Haüy*; parenthine; scapolit; skapolit; thorite, *Berzelius*; wernerit, *Haüy.*

Parasite. See Boracite.

PARASTILBITE, *von Walters.* $CaAl_2Si_6O_{16}+3H_2O$. Parastite.

Parastite. See Parastilbite.

Parathorite. See Thorite.

Paratomous augite spar. See Pyroxene.

Paratomous kalk haloid. See Ankerite.

Paratomous kouphone spar. See Harmotome.

Paratomous lead baryte. See Caledonite.

Paratomous lime haloid. See Ankerite.

Parenthine. See Paranthite.

Pargas erabyite. See Microcline.

Pargasite. See Amphibole.

Parian marble. See Calcite.

PARISITE, *Med. Spada.* $(Ce, La, Di, Ca)_4(CO_3)_3F_2$. Hexagonal. Carbonate de lanthane; musite, *Med. Spada*; mussite; mussonite, *Dufr.*; muzite.

Paroligoclase, Schmid. Insoluble residue of Ilmenberg rock.

Parophite. See Pinite.

Partschin. See Partschinite.

PARTSCHINITE, *Dana.* $(Fe, Mn)_3(Al, Fe)_2(SiO_4)_3$. Monoclinic. Partschin, *Haid.*

PARTSCHITE, *Shep.* Fe, Ni, Mg, P, etc.

Partzite, Arents. Near Stibiconite.

Parva cum portione martis et jovis mixta. See Wolframite.

Passauite. See Ekebergite.

Passyite. See Quartz.

Pastreite, Norman. Near Raimondite. Pastrerite.

Pastrerite. See Pastreite.

PATERAITE, *Haid.* $CoMoO_4$. Amorphous.

Patina. See Malachite.

Patrinite. See Aikinite.

Patronite. Crystals and yellow particles in quartz.

Pattersonite, I. Lea. A mica (?).

Paulite. See Hypersthene.

Paussauit. See Ekebergite.

Pazit. See Pacite.

Pea iron ore. See Limonite.

Pea mineral. See Pittolium group.

Pea ore. See Limonite.

Pea stone. See Calcite.

Peach. See Ripidolite and Prochlorite.

Peacock coal. See Mineral coal.

Peacock copper. See Chalcopyrite.

Pealite. See Opal.

Pearl kerate. See Calomel and Cerargyrite.

Pearl mica. See Margarite.

Pearl sinter. See Opal.

Pearl spar. See Ankerite and Dolomite.

Pearlite. See Opal.

Pearlstone. See Orthoclase.

Pearly quartz. See Quartz.

Peat. See Mineral coal.

Pebble. See Quartz.

Pechblende. See Uraninite.

Pecheisenerz. See Göthite.

Pecherz. See Uraninite.

Pechgranat. See Garnet.

Pechkohle. See Mineral coal.

echkupfer. See Chrysocolla.
echopal. See Opal.
echstein. See Orthoclase.
echstein de Ménil-Montant. See Opal.
echstein, fusible. See Orthoclase.
echstein, infusible. See Opal.
echuran. See Uraninite.
echuran hyacinthe. See Gummite.
'eckhamite, Smith. (Fe, Mg)$_4$Si$_3$O$_{10}$. Meteoric.
'ecktolite. See Pectolite.
'ECTOLITE, *Beud.* (Ca, Na$_2$, H$_2$)SiO$_3$. Monoclinic. Osmelite, *Breit.*; osmelith, *Breit.*; pecktolite; pektolith, *von Kob.*; photolite; photolith, *Breit.*; picolite; ratholite; soda table spar, *Thom.*; soda wollastonite, *Thom.*; stellite, *Thom.*; wollastonite, *Thom.*; wollastonite fibreuse (?); zéolithe calcaire.
Pedernal. See Quartz.
Peganite (*of Arkansas*). See Callainite.
PEGANITE, *Breit.* $Al_4P_2O_{11}+6\ H_2O$. Orthorhombic. Striegisan.
Pegmatolite. See Orthoclase.
Pegmatolith. See Orthoclase.
Pektolith. See Pectolite.
Pelagite, Church. Manganese nodules, brought up by the Challenger.
Pelagosite, Moser. Coating on dolomite produced by sea water.
Pélés hair. Lava blown by the wind. Capillary obsidian; obsidienne capillaire.
Pelhamine. See Serpentine.
Pelhamite. See Quartz.
PELICANITE. $Al_4Si_9O_{24}+4\ H_2O$. Amorphous. Pelikanite.
Pelikanit. See Pelicanite.
Peliom. See Iolite.
Pelitische felsittue von Chemnitz. See Pholerite.
Pella natural. See Amalgam.
Peloconite. See Crednerite.
Pelokonite. See Wad.
Pelosiderit. See Siderite.
Pencalite. See Dolomite.
PENCATITE, *Roth.* $CaCO_3\ Mg(OH)_2$.
Pencil stone. See Pyrophyllite.
Pencil stone from Merigomish. See Pyromorphite.
Pennine. See Penninite.
PENNINITE., *Dana.* $H_8(Mg, Fe)_5(Al, Fe''', Cr)_2Si_3O_{18}$. Hexagonal. Chlorite pt.; chlorite blanc; hydrotalc,

PENNINITE—Continued.
Necker; mica triangulaire, *Haüy*; pennine, *Fröbel*; steatite of Snarum; wasserglimmer of Morin, *Necker*.
KÄMMERERITE, *Nord.*: Chromchlorit, *Herm.*; chromochlorite; rhodochrome, *Fielder*; rhodophyllite, *Genth*.
LOGANITE, *Hunt*: Pseudophite, *Kenng*.
TABERGITE, *Scheer.*: Blue talc, *Wern.*; blue talc of Taberg, *Wern.*; mica chlorite.
Pennite. See Hydrodolomite and Zaratite.
Pentaklasit. See Pyroxene.
Pentelican marble. See Calcite.
PENTLANDITE, *Dufr.* Fe_2NiS_3. Isometric. Eisennickelkies, *Scheerer*; nicopyrite, *Shep.*; sulphuret of iron and nickel.
PENWITHITE, *Collins.* $MnSiO_3+2\ H_2O$. Massive.
Peperino. See Calcite.
Peplolite. See Fahlunite.
Péponite. See Amphibole.
PERCYLITE, *Brooke.* $PbCuClO+xH_2O$. Isometric. Chlorure double de cuivre et de plomb.
Periclase. See Periclasite.
Periclasia. See Periclasite.
PERICLASITE, *Dana.* MgO. Isometric. Magnesia; native magnesia; periclase, *Germ.*; periclasia, *Scacchi*; periklas.
Pericline. See Albite.
Peridot. See Chrysolite.
Péridot blanc. See Forsterite and Monticellite.
Péridot ferrique. See Fayalite.
Péridot ferrugineux. See Fayalite.
Péridot granuliforme. See Chrysolite.
Péridot météorique. See Chrysolite.
Peridot of Brazil. See Tourmaline.
Peridot of Ceylon. See Tourmaline.
Péridot olivine. See Chrysolite.
Péridot ordinaire. See Chrysolite.
Péridot titanifère. See Chrysolite.
Peridoto bianco. See Forsterite.
Periklas. See Periclasite.
Periklasit. See Apatite.
Periklin. See Albite.
Peristerite. See Albite.
Peritomous antimony glance. See Freieslebenite.
Peritomous augite spar. See Arfvedsonite.

Peritomous hal-baryte. See Strontianite.
Peritomous kouphone spar.
Peritomous lead baryte. See Mendipite.
Peritomous ruby blende. See Cinnabar.
Peritomous titanium ore. See Rutile.
Perlaire. See Orthoclase.
Perlglimmer. See Margarite.
Perlite. See Opal and Orthoclase.
Perlmutter-opal. See Opal.
Perlsinter. See Opal.
Perlspath. See Dolomite.
Perlstein. See Orthoclase.
Perlstein pumiciforme. See Pumice.
PEROFSKITE, *G. Rose.* $CaTiO_3$. Isometric. Hydrotitanite; lime titanate; perowskit, *G. Rose*; titanate de chaux; titanate of lime.
Perowskine. See Triphylite.
Perowskit. See Perofskite.
Perowskyn. See Triphylite.
Peroxide of iron. See Magnetite.
Peroxide of tin. See Cassiterite.
Peroxyde de cobalt. See Wad.
Peroxyde de fer. See Hematite.
Peroxyde de manganèse. See Pyrolusite.
Peroxyde de manganèse hydraté. See Manganite.
Peroxyde de manganèse potassé. See Psilomelane.
Peroxyde métalloïde argentin. See Manganite.
Persbergite. See Iolite.
Persian smaragdus. See Turquois.
Perthite. See Microcline.
Pesillite. See Rhodonite.
Pestene de Ménil-Montant. See Opal.
Petaline spar. See Petalite.
Petalite. See Lepidolite.
PETALITE, *d'Andrada.* $(Na,Li)_6Al_8Si_{30}O_{75}$. Hexagonal. Castor, *Breit.*; castorite; hydrocastorite; hydrokastorit; idrocastorite; kastor; petaline spar, *Mohs*; petalite spar, *Mohs*; prismatic petaline spar, *Mohs*.
Petalite spar. See Petalite.
Petre, salt. See Nitre.
Petrified wood. See Quartz.
Petrilite. See Orthoclase.
Pétrole. See Naphtha.
Pétrole compacte. See Mineral coal.
Petrolene. See Pittolium and Asphaltum.
Petroleum. See Naphtha and Pittolium group.
Petrosilex. See Albite, Orthoclase, and Quartz.
Pétrosilex feuilleté. See Orthoclase.
Pétrosilex résinite. See Orthoclase.
PETTKOITE, *Paulinyc.* $(Fe''_3, Fe'''_2)S_3O_9$. Isometric.
Petuntze. See Orthoclase.
PETZITE, *Haid.* $(Ag, Au)_3Te$. Bunsenin; tellurgoldsilber, *Haus.*; tellursilber, *Petz.*
Pfaffite. See Jamesonite.
Pfeifenstein. See Scoulerite.
Phäactinite. See Amphibole.
Phacolite. See Chabazite.
Phæstine. See Enstatite and Bastite.
Phakolite. See Chabazite.
Phakolith. See Chabazite.
PHARMACOLITE, *Phillips.* $2\,HCaAsO_4+5\,H_2O$. Monoclinic. Arseniate of lime; arsenicite, *Beud.*; arsenikblüthe, *Wern.*; arseniksaurer kalk, *Selb.*; chaux arséniatée, *fr.*; chaux sous-arséniatée; hemi-prismatic euclas haloid; hemi-prismatic gypsum haloid, *Haid.*; lime arsenate; native calx of arsenic, *Kirw.*; pharmakolit, *Karst.*; pharmakolith.
PHARMACOSIDERITE, *Hausmann.* $3\,Fe_2As_2O_8.Fe_2(OH)_6$. Isometric. Arseniate of iron, *Phillips*; arsenicated iron ore, *Kirw.*; arseniksaures eisen; arseniksaures eisen in würfeln kryst., *Klapr.*; cube ore, *James.*; fer arséniaté, *Haüy*; fer minéralisé par l'acide arsénique, *Proust*; hexahedral liroconite, *James.*; hexahedral liroconmalachite; hexahedral olivenite, *James*; iron arsenate; mina cubica, *Herrg.*; olivenerz, *Klapr.*; pharmakosiderit, *Haus.*; siderite; würfelerz, *Lenz.*
Pharmakochalzit. See Olivenite.
Pharmakolit. See Pharmacolite.
Pharmakolith. See Pharmacolite.
Pharmakosiderit. See Pharmacosiderite.
Phasachate. See Quartz.
PHENACITE. Be_2SiO_4. Hexagonal. Phenakit, *Nordenskiold.*
Phenakit. See Phenacite.
Phengite. See Muscovite.
Philadelphite. See Vermiculite.
Phillipsite. See Bornite and Gismondite.

PHILLIPSITE, *Lévy*. (Ca, Na_2)$Al_2(SiO_3)_8+4H_2O$. Orthorhombic. Christianite, *Des Cloiz.*; harmotome à base de chaux; harmotome calcaire; harmotome de Marbourg; kali-harmotom; kalk-harmotome, *Germ.*; lime harmotome, *Connel*; normalin, *Breit.*; potash harmotome; puflerite, *Bukeisen*; staurotypous kouphone-spar.

Phisalit. See Topaz.

Phisalith. See Topaz.

Phlogolite. See Phlogopite.

PHLOGOPITE, *Breit.* $K_2(OH, F)_2Mg_6Al_2Si_6O_{21}$. Monoclinic. Aspidolite; aspidolith, *von Kob.*; magnesia glimmer; magnesia mica; phlogolite, *Breit.*; rhombenglimmer, *Kenngott*; rhombic mica.

Phœnicite. See Phœnicochroite.

PHŒNICOCHROITE. 2 $PbCrO_4$. PbO. Orthorhombic. Chromate of lead, *Thom.*; melanochroit, *Herm.*; phœnicit, *Haid.*; phœnikochroit, *Glock.*; sesquichromate of lead; subsesquichromate de plomb; subsesquichromate of lead, *Thom.*

Phœnikochroite. See Phœnicochroite.

Phœstine. See Enstatite.

Pholerite. See Kaolinite.

PHOLERITE, *Guillemin*. $Al_4(SiO_4)_3+4H_2O$. Orthorhombic. Cyphoïte; meerschaluminite, *Ross*; pelitische felsitufe von Chemnitz, *Knop.*; simlaite, *Schrauf.*

Phonite. See Nephelite.

PHOSGENITE, *Breit.* $PbCO_3$. $PbCl_2$. Tetragonal. Bleihornerz, *Germ.*; bleikerat, *Glocker*; brachytypous lead baryte, *Mohs*; carbonated muriate of lead; cerasine, *Beud.*; cerasite; chlorbleispath, *Germ.*; chlorocarbonate of lead, *Thom.*; corneous lead, *James.*; cromfordite, *Greg* and *Lettsom*; cromfordtite; galenoceratite, *Glocker*; hornblei, *Karst.*; horn lead; kerasine, *Beud.*; kerasite; lead chlorocarbonate; lead murio-carbonate; phosgen-spath, *Breit.*; plomb carbonaté muriatifère, *Haüy*; plomb chloro-carbonaté, *Dufr.*; plomb corné, *Fr.*; plomb murio-carbonaté, *Fr.*; salzsaures bleierz, *Klapr.*

Phosgen-spath. See Phosgenite.

Phosphammite, Shep. Phosphate of ammonia.

Phosphate ammoniaco-magnésien. See Struvite.

Phosphate brun-terreux. See Dufrenite.

Phosphate calcaire. See Apatite.

Phosphate d'alumine de Bernon. See Evansite.

Phosphate d'alumine de Bourbon. See Phillipsite.

Phosphate de chaux graphiteux. See Apatite.

Phosphate natif de fer mélangé de manganèse. See Triplite.

Phosphate of alumina. See Wavellite.

Phosphate of ammonia. See Phosphammite.

Phosphate of cerium. See Cryptolite.

Phosphate of copper. See Libethenite, Thrombolite, and Pseudomalachite.

Phosphate of iron. See Cacoxenite, Carphosiderite, Dufrenite, and Triphylite.

Phosphate of iron and manganese. See Triplite.

Phosphate of lead. See Pyromorphite.

Phosphate of lead, arseniated. See Pyromorphite.

Phosphate of lime. See Apatite.

Phosphate of lime and copper. See Apatite.

Phosphate of manganese. See Triplite.

Phosphate of uranium. See Autunite.

Phosphate of uranium and copper. See Torbernite.

Phosphate of uranium containing phosphate of copper. See Torbernite.

Phosphate of yttria. See Xenotime.

Phosphate of zinc. See Hopeite.

Phosphide of iron and nickel. See Schreibersite.

Phosphocerite. See Cryptolite.

Phosphochalcite. See Pseudomalachite.

Phosphochromite. See Elroquite.

PHOSPHOCHROMITE, *Herm.* $Pb_3P_2O_8+(Pb, Cu)CrO_4$.

Phosphorblei. See Pyromorphite.

Phosphoreisensinter. See Diadochite.

Phosphorgummite. See Gummite.

Phosphoriges hydrogen-gas. See Phosphuretted hydrogen.

Phosphorkupfer. See Pseudomalachite.

Phosphorkupfererz. See Pseudomalachite and Libethenite.

Phosphore de Bologne. See Barite.
Phosphorite. See Apatite.
Phosphorluft. See Phosphuretted hydrogen.
Phosphormangan. See Triplite.
Phosphorochalcit. See Pseudomalachite.
Phosphorsaurer kalk. See Apatite.
Phosphorsaures blei. See Pyromorphite.
Phosphorsaures eisen. See Vivianite.
Phosphorsaures kupfer. See Pseudomalachite.
Phosphorsaure thonerde. See Lazulite.
Phosphorsyrad ytterjord. See Xenotime.
Phosphorwasserstoff-gas. See Phosphuretted hydrogen.
PHOSPHOURANYLITE, *Genth.* $(UO_2)_3P_2O_8+6\ H_2O$.
PHOSPHURETTED HYDROGEN, *Jameson.* PH_3. Hydrogène phosphoré; phosphoriges hydrogen-gas, *Mohs*; phosphorluft; phosphorwasserstoff-gas, *Haus.*
Phosphyttria. See Xenotime.
Photicite. See Rhodonite.
Photizit. See Rhodonite.
Photolite. See Pectolite.
Photolith. See Pectolite.
Phthamite. See Quartz.
Phthanite. See Quartz.
Phthanyte. See Quartz.
Phyllin glance. See Wehrlite.
Phyllinglanz. See Silberphyllinglanz and Wehrlite.
PHYLLITE, *Thomson.* $H_6(Fe, Mn)_3Al_4(SiO_4)_6$. Newportite, *Totten*; ottrelite, *Des Cloiz*; ottrelith.
Phylloretin. See Könlite.
Physalite. See Topaz.
PHYTOCOLLITE. $C_{10}H_{22}O_{16}$.
Piauzite. Near Asphaltum. Erdharz; retinit von Piauze, *Haid.*
PICITE, *Nies.* $Fe'''_{14}(PO_4)_8(OH)_{18}+27\ H_2O$. Amorphous.
PICKERINGITE, *Hayes.* $MgAl_2(SO_4)_4+22\ H_2O$. Monoclinic (?). Alun magnésien; magnesia alum, *Hayes*; magnesia-alaun, *Germ.*; pitkeringite; talkerde-alaun, *Germ.*
Picolite. See Spinel and Pectolite.
Picotite. See Spinel.
Picranaloime. See Analcite.
Picrite. See Dolomite.
Picroallumogene, Roster. Very near Pickeringite.
PICROEPIDOTE. $(Mg_3, Al_2, Fe_3)(SiO_3)_3$ Monoclinic.
Picrofluite. Probably mixture CaF_2, MgO, and SiO_2. Amorphous.
Picrolite. See Serpentine.
Picromeride. See Picromerite.
PICROMERITE. $K_2Mg(SO_4)_2+6\ H_2O$. Monoclinic. Kainit, *Zincken*; picromeride, *Scac.*; pikromerit, *Ramm.*; schönit, *Reich.*
Picropharmacolite. See Berzeliite.
Picrophyll, Scan. Near Pyroxene. Pikrophyll.
PICROSMINE. $2\ MgSiO_3+H_2O$. Orthorhombic. Pikrosmin, *Haid.*
Picrotanite. See Menaccanite.
Picrotephroite. See Tephroite.
Pichrothomsonite. See Thomsonite.
Picryte. See Chrysolite.
Pictite. See Titanite.
Piddingtonite, Haid. Near Anthophyllite.
PIEDMONTITE. *Kenngott.* $HCa_4R'''_3Si_3O_{13}$. Monoclinic. Épidote manganèsien; épidote manganèsifère; manganepidot, *Germ.*; manganèse oxydé violet silicifère, *H.*; manganèse rouge, *Napione*; Piedmontischer braunstein, *Wern*; röd magnesia, *Cronst.*
Piedra de acero. See Siderite.
Piedra de escriver. See Graphite.
Piedra melada. See Mellite.
Pierre à briquet. See Quartz.
Pierre à corne. See Orthoclase and Quartz.
Pierre à feu. See Quartz.
Pierre à fusil. See Quartz.
Pierre à Jésus. See Gypsum.
Pierre à lancette. See Quartz.
Pierre alumineuse. See Alunite.
Pierre alumineuse de la Tolfa. See Alunite.
Pierre à magot. See Biharite, Pinite, Pyrophyllite, and Talc.
Pierre à noyaux. See Pyroxene.
Pierre à plâtre. See Gypsum.
Pierre à pot. See Talc.
Pierre à savon du Maroc. See Sepiolite.
Pierre à sculpture. See Talc.
Pierre calaminaire. See Smithsonite.
Pierre calcaire d'Edelfors. See Edelforsite.

Pierre calcaire grenue. See Calcite.
Pierre calcaire puante. See Calcite.
Pierre calcaire très peu effervescente avec les acides. See Dolomite.
Pierre carré. See Orthoclase.
Pierre contre les rats. See Witherite.
Pierre cruciforme. See Harmotome.
Pierre d'alun. See Alunite.
Pierre d'amadou. See Jamesonite.
Pierre d'Arménie. See Pyroxene.
Pierre d'arquebuse. See Marcasite.
Pierre d'asperge. See Apatite.
Pierre d'azur. See Lapis lazuli.
Pierre de Baram. See Talc.
Pierre de Bologne. See Barite.
Pierre de carabine. See Marcasite.
Pierre de casse-tête. See Amphibole and Jadeite.
Pierre de Ceylon. See Tourmaline.
Pierre de Côme. See Talc.
Pierre de Cosne. See Talc.
Pierre de croix. See Andalusite and Staurolite.
Pierre d'étain. See Cassiterite.
Pierre de foudre. See Meteorites.
Pierre de gallinace. See Orthoclase.
Pierre de hache. See Amphibole and Jadeite.
Pierre de iu. See Amphibole and Jadeite.
Pierre de Labrador. See Labradorite.
Pierre de la circoncision. See Amphibole and Jadeite.
Pierre de lard. See Pinite and Pyrophyllite.
Pierre de lune. See Orthoclase.
Pierre de lune argentine. See Orthoclase.
Pierre de Lydie. See Quartz.
Pierre de macles. See Andalusite.
Pierre de Marmarosch. See Apatite.
Pierre de miel. See Mellite.
Pierre de paille. See Carpholite.
Pierre de poix. See Orthoclase and Quartz.
Pierre de porc. See Biharite, Pinite, Pyrophyllite, and Talc.
Pierre de savon. See Montmorillonite and Saponite.
Pierre de serin. See Epidote.
Pierre de Thum. See Axinite.
Pierre de touche. See Quartz.
Pierre de tripes. See Anhydrite.
Pierre de vulpino. See Anhydrite.
Pierre des Amazons. See Amphibole and Jadeite.
Pierre des Incas. See Marcasite.
Pierre des reins. See Amphibole and Jadeite.
Pierre du Levant. See Dolomite.
Pierre du Soleil. See Oligoclase and Orthoclase.
Pierre en tige. See Wernerite.
Pierre grasse. See Nephelite.
Pierre météorique. See Meteorites.
Pierre néphrétique. See Amphibole and Jadeite.
Pierre ollaire. See Talc.
Pierre pesant. See Scheelite.
Pierre phosphorique. See Apatite.
Pierre ponce. See Pumice.
Pierre puante. See Barite.
Pierre sanguine. See Hematite.
Pierres tombées du ciel. See Meteorites.
Pietra aventurina. See Quartz.
Pietra di hijada. See Amphibole and Jadeite.
Pietra dura. See Calcite.
Pietra epatica. See Barite.
PIGOTITE. $Al_8C_6H_{10}O_{16}+27\,H_2O$. Humate de chaux, *Pel.*
PIHLITE, *Scfström.* $(R''_3, Al_2)\,(SiO_3)_3$. Pseudomorphous. Cymatolite, *Shep.*
Pikranalcime. See Analcite.
Pikrolite. See Serpentine.
Pikrolith. See Serpentine.
Pikromerit. See Picromerite.
Pikropharmakolith. See Berzeliite.
Pikrophyll. See Picrophyll.
Pikrosmine. See Picrosmine.
Pikrothomsonit. See Thomsonite.
Pilarite. See Chrysocolla.
PILINITE, *von Lasaulx.* SiO_3 55.7, Al_2O_3, Fe_2O_3 18.6, CaO 19.5, H_2O 4.97. Orthorhombic.
PILOLITE, *Heddle.* $Mg_4Al_2Si_{10}O_{27}+15\,H_2O$. Liége de montagne; mountain cork; mountain leather.
Pilsenite. See Wehrlite.
Pimelite. See Alipite.
PIMELITE, *Karst.* NiO, Fe_2O_3 Al_2O_3, SiO_2, etc. Massive. Chrysoprase earth; grüner chrysopraserde; *Klapr.*; hard pimelite; nickel hydrosilicate; nickel silicate; schuchardite.
Pinguite. See Chloropal.

PINITE. *Karst.* $H_6K_2Al_4(SiO_4)_5$.

AFTER ANORTHITE.

POLYARGITE, *Svanberg.*
PYRRHOLITE, *des Cloiz.*: Pyrrholith.
ROSITE, *Svanberg*: Rosellan; rosine.

AFTER FELDSPAR.

PINITOID, *Knop*: Pinitoid schist.

AFTER IOLITE.

GIGANTOLITE, *Nord.*: Gigantolith.
IBERITE, *Svanberg.*
PINITE, *Karst.*: Hydrous iolite; iolithe hydratée; kieselerde + thonerde, *Klapr.*; pinite de Saxe; speckstein, *Wern.*

AFTER NEPHELITE.

DYSINTRIBITE, *Shep.*: Dyssintribite.
GIESECKITE, *Allan*: Giseckite.
LIEBENERITE, *Marignac.*
LYTHRODES, *Karst.*: Splittriger wernerit, *Haus.*

AFTER SPODUMENE.

KILLINITE, *Thom.*

MASSIVE.

AGALMATOLITE, *Phil.*: Agalmatolithus; bildstein, *Klapr.*; figure stone; lardite; pagodite, *Napione*; pierre à magot; pierre de lard; pierre de porc; talc graphique.
LITHOMARGE: Argile lithomarge; steinmark.
ONCOSINE: Onchosine; onkosin.
OÖSITE, *Marx.*

Pinitartiger scapolit. See Wilsonite.
Pinite de Saxe. See Pinite.
Pinitoid. See Pinite.
Pinitoid schist. See Pinite.
PINNOITE. $MgB_2O_4+3\,H_2O$. Tetragonal.
Piomo. See Lead.
Piotine. See Saponite.
Pipe ore. Limonite.
Pipe stone. See Scoulerite and Catlinite.
Pirenäit. See Garnet.
Pirita de azufre. See Pyrite and Marcasite.
Pirita gialla. See Chalcopyrite.
Pirita hepatica. See Marcasite.
Pirita venenosa. See Arsenopyrite.
Pirop. See Garnet.
PISANITE, *Kenng.* $(Fe,Cu)SO_4+7H_2O$. Cyanoferrite; native sulphate of copper and iron, *Pisani*; vitriolite.
Pisiform ironstone. See Limonite.
Pisolite. See Calcite.
Pisolithischer quartz. See Quartz.
Pisolitic black iron ore. See Psilomelane.
Pisophalt. **A soft bitumen.**
Pissasphalte. See Pittolium group.
Pissasphaltus. Pittolium group.
Pissite. See Orthoclase.
Pissophane. See Pissophanite.
PISSOPHANITE, *Dana.* $Fe'''_4SO_7+15\,H_2O$. Garnsdorfite; garnsdorffite; pissophan, *Breit.*
Pistacite. See Epidote.
Pistazite. See Epidote.
PISTOMESITE, *Breit.* $MgFe(CO_3)_2$. Hexagonal. Mesitin pt.; pistopyrite, *Breit.*
Pistopyrite. See Pistomesite.
Pitchblende. See Uraninite and Gummite.
Pitch coal. See Mineral coal.
Pitch mineral. See Asphaltum and Pittollium group.
Pitch opal. See Opal.
Pitch ore. See Uraninite.
Pitchlike zinc blende. See Uraninite.
Pitchstone. See Orthoclase.
Pitchstone of Ménil-Montant. See Opal.
Pitchy copper ore. See Chrysocolla.
Pitchy iron ore. See Triplite and Pitticite.
Pitkarandite. See Talc.
Pitkarandite, Scheer. **Near Pyroxene.**
Pitkeringite. See Pickeringite.
Pittasphalt. See Pittolium group.
Pitticite. See Glockerite.
PITTICITE, *Haus.* $Fe'''_5S_3PAsO_{15}+16\,H_2O$. Massive. Arseneisensinter, *Germ.*; brown iron cinder; chenocoprolite; diarsenate of iron; eisenpecherz, *Karst.*; eisensinter, *Wern.*; fer oxydé résinite, *Haüy*; fer sous-sulfaté; fer sulfaté ocreux; iron sinter, *Allan*; pitchy iron ore, *Phillips*; pittizit, *Haus.*; retin allophane; sideritine, *Beud.*; uncleavable retin allophane, *Mohs*; vitriol ochre.
Pittinerz. See Eliasite.
Pittinit. See Eliasite.
Pittinus inferior. See Eliasite.

Pittizit. See Glockerite and Pitticite.

PITTOLIUM GROUP. C_nH_{2n}. Liquids. Baume de momie; bergtheer; bitume glutineux, *H.*; bitume visqueux; earthy bitumen; earthy mineral pitch, *James.*; erdiges erdpech, *Wern.*; goudron minéral; maltha, *Plin.*; malthe, *Beud.*; minéral graisse; mineral oil, *Phil.*; mineral pitch, *James.*; mineral tar; pea mineral; petroleum pt.; pissasphalte; pissasphaltum, *Pliny*; Πιττασφάλτος, *Diosc.*; pittasphalte, *Diosc.*; poix minérale; poix minérale terreux, *Broch.*; semi-compact mineral pitch, *Kirw.*

DECATYLENE. $C_{10}H_{20}$. Rutylene.

ENDECATYLENE. $C_{11}H_{22}$. Margarylene.

DODECATYLENE. $C_{12}H_{24}$. Laurylene.

DECATRITYLENE. $C_{13}H_{26}$. Cocinylene.

Placodine, Breithaupt. Ni_2As. Monoclinic. Plakodine.

PLAGIOCITRITE, *Sandberger.* R_2SO_4. $R_2SO_6+9\ H_2O$. R=Al, Fe, K, etc. Monoclinic or triclinic.

Plagioclase, Breit. A collective name for the triclinic feldspars, the two prominent cleavage directions in which are oblique to each other.

PLAGIONITE, *G. Rose.* $4PbS.\ 3Sb_2S_3$. Monoclinic.

Plakodine. See Placodine.

Planerite, Hermann. A probable Wavellite with 3 to 4 per cent. each of copper and iron oxide.

Plasma. See Quartz.

Plasma de zaffiro. See Quartz.

Plaster cement. See Calcite.

Plaster of Paris. See Gypsum.

Plaster stone. See Gypsum.

Plata. See Silver.

Plata aerata. See Selbite.

Plata azul. See Selbite.

Plata bismutal. See Chilenite.

Plata cornea. See Embolite.

Plata cornea amarilla. See Iodyrite.

Plata cornea amarilla melada. See Bromyrite.

Plata cornea blanca. See Cerargyrite.

Plata cornea verde. See Embolite.

Plata verde. See Embolite and Bromyrite.

Platin, gediegen. See Platinum.

Platina. See Platinum.

Platina del Pinto. See Platinum.

Platine. See Platinum.

Platiniferous gray copper. See Tetrahedrite.

PLATINIRIDIUM, *Svanberg.* Pt, Ir, Rh. Isometric.

PLATINUM. Pt(Fe). Isometric. Eisenplatin, *Breit.*; gediegen platin, *Wern.*; hexahedral platina, *Mohs*; iron platinum; native platinum; platina, *Ulloa*; platina del Pinto, *Scheffer*; polyxen, *Haus.*

PLATTNERITE, *Haid.* PbO_2. Hexagonal. Braunbleioxyd, *Haus.*; oxide of lead; schwerbleierz, *Breit.*; superoxide of lead, *Dana.*

Platyopthalmon. See Stibnite.

Pleiertz. See Galenite.

Pleiglanz. See Galenite.

Pleischweiss. See Galenite.

PLENARGYRITE. $AgBiS_2$.

Plengite. See Anhydrite.

Pleonaste. See Spinel.

Plessite. See Gersdorffite.

Pleurocłase. See Wagnerite.

Pleuroklas. See Wagnerite.

Plinian, Breit. FeAsS. Monoclinic. Mispickel, *G. Rose.*

Plinthite. See Ochran.

Plomballophane. See Allophane.

Plomb antimonié. See Bindheimite(?).

Plomb antimonié sulfuré. See Bournonite and Boulangerite.

Plomb argentifère. See Galenite.

Plomb arséniaté. See Mimetite.

Plomb arséniaté hydraté. See Mimetite.

Plomb arsénié. See Mimetite.

Plomb arsénio-sulfuré. See Binnite.

Plomb blanc. See Cerussite.

Plomb blanc rhomboédrique. See Susannite.

Plomb bleu. See Galenite.

Plomb brun. See Pyromorphite and Vanadinite.

Plomb carbonaté. See Cerussite.

Plomb carbonaté muriatifère. See Phosgenite.

Plomb carbonaté rhomboïdal. See Leadhillite.

Plomb chloro-carbonaté. See Phosgenite.

Plomb chloruré. See Cotunnite, Matlockite, and Mendipite.

Plomb chromaté. See Crocoite and Vauquelinite.

Plomb chromaté basique.
Plomb chromaté rouge. See Crocoite.
Plomb chromé. See Vauquelinite.
Plomb chromé vert. See Vauquelinite.
Plomb corné. See Phosgenite.
Plomb hydroaluminé. See Plumbogummite.
Plomb hydroalumineux. See Plumbogummite.
Plomb jaune. See Wulfenite.
Plomb molybdaté. See Wulfenite.
Plomb muriaté. See Mendipite.
Plomb murio-carbonaté. See Matlockite, Mendipite, and Phosgenite.
Plomb natif. See Lead.
Plomb oxidé. See Massicot and Minium.
Plomb oxidé jaune. See Massicot.
Plomb oxidé rouge. See Minium.
Plomb oxychlorioduré. See Schwartzembergite.
Plomb phosphaté. See Pyromorphite.
Plomb phospho-arséniaté. See Mimetite.
Plomb rouge. See Crocoite.
Plomb rouge en stalactites, tantôt en globules. See Plumbogummite.
Plomb sélénié. See Clausthalite.
Plomb séléniuré. See Clausthalite and Lehrbachite.
Plomb spathique. See Cerussite.
Plomb spathique blanc. See Cerussite.
Plomb sulfaté. See Anglesite.
Plomb sulfaté bleu. See Linarite.
Plomb sulfaté cuprifère. See Linarite.
Plomb sulfato-carbonaté cuprifère. See Caledonite.
Plomb sulfato-tricarbonaté. See Leadhillite.
Plomb sulfo-carbonaté. See Lanarkite.
Plomb sulfuré. See Galenite.
Plomb sulfuré antimonifère. See Bournonite and Galenite.
Plomb sulfuré épigène. See Galenite.
Plomb sulfuré plumbocuprifère. See Bournonite.
Plomb sulfuré prismatique épigène. See Galenite.
Plomb sursulfuré. See Galenite.
Plomb telluré. See Altaite.
Plomb tungstaté. See Stolzite.
Plomb vanadiaté. See Vanadinite.
Plomb vert. See Pyromorphite.
Plomb vert arsenical. See Mimetite.
Plombagine. See Graphite.
Plombagine charbonneuse. See Mineral coal.
Plombagine vulgaire. See Graphite.
Plombgomme. See Plumbogummite.
PLOMBIERITE, *Daubrée.* $CaSiO_3+?$ H_2O.
Plombocalcite. See Calcite.
Plomo. See Lead.
Plomo amarillo. See Wulfenite.
Plomo de agua. See Molybdenite.
Plomo negro. See Cerussite.
Plomo pardo. See Vanadinite.
Plomo roxo-espatico. See Crocoite.
Plumbago. See Graphite and Galenite.
Plumballophane. See Allophane.
Plumbeine. See Galenite.
Plumbgomme. See Plumbogummite.
Plumbic ochre. See Massicot.
Plumbiferous blende. See Sphalerite.
Plumbiodite. See Schwartzembergite.
Plumbocalcite. See Calcite.
Plumbo-cupriferous sulphuret of bismuth. See Aikinite.
Plumbocuprite. See Cuproplumbite.
PLUMBOGUMMITE, *Shepard.* $Al_6Pb_3(OH)_{24}(PO_4)_6+10\ H_2O$. Amorphous. Aluminate de plomb, avec eau de combinaison, *Berz.*; aluminous oxide of lead; bleialuminat, *Berz.*; bleihydroaluminat, *Germ.*; bleigummi, *Berz.*; gummibleispath, *Germ.*; gummispath, *Breit.*; gum lead; hitchcockite, *Shep.*; hydro-aluminous lead; native aluminate of lead, *Smithson*; plombgomme, *de Laumont*; plomb hydroaluminé; plomb hydroalumineux, *H.*; plomb rouge en stalactites, tantôt en globules, *de Lisle*; plumbgomme, *Beud.*; plumboresinite; sel acido-phosphorique-martial, *de Laumont*; sexaluminate of lead, *Thomson.*
PLUMBOMANGANITE, *Hannay.* Mn_2S. PbS. Crystalline.
Plumbonacrite.
Plumboresinite. See Plumbogummite.
Plumbostannite, Raimondi. Sb, Sn, Pb, Fe, S, etc. Amorphous.
Plumbostibnite. See Boulangerite.
Plumbum acido aereo-mineralisatum. See Cerussite.
Plumbum acido vitriolico mineralisatum. See Anglesite.
Plumbum album. See Cassiterite.

um arsenico-mineralisatum. Mimetite.
um candidum. See Tin.
um cinereum. See Bismuth.
um nigrum. See Lead.
um spatosum flavo-rubrum. See Ilfenite.
um sulphure et argento-mineralisatum. See Galenite.
um sulphure et arsenico-mineralisatum. See Galenite.
es. See Jamesonite.
se antimonial ore. See Jameson-
se gypsum. See Gypsum.
se mica. See Muscovite.
se ore. See Jamesonite.
sit. See Jamesonite.
copper. See Cuprite.
nu. See Amphibole and Jadeite.
See Pyrite.
t. See Bornite.
pyrite. See Bornite.
inérale. See Pittolium group.
inérale élastique. See Elater-
inérale scoriacée. See Asphal-
inérale terreuse. See Pittolium up.
NITE, *Breithaupt.* MnO_2. Tegonal.
chiefer. See Opal.
ng slate. See Opal.
JCITE, *Dana.* $H_2Cs_2Al_2(SiO_3)_6$. netric. Pollux, *Breit.*
See Pollucite.
elphite. See Garnet.
the de Vic. See Glauberite.
the d'Ischel. See Glauberite.
the grise de Vic. See Glauber-(?).
gite. See Pinite.
ARGYRITE, *Sandberger.* Ag_6 S_3. Isometric.
rnite. An arsenate of manganese.
kinite.
BASITE, *H. Rose.* 9 (Ag_2, Cu_2) Sb_2S_3. Orthorhombic. Eugenglz, *Breit.*; sprödglaserz, *Wern.*
roilite. See Fahlunite.
roite. See Iolite.
rom. See Pyromorphite.
romatic felspar. See Labrador-

POLYCRASE, *Scheerer.* (Ca, Fe)$_4$(Y, Er, Ce)$_6$UNb$_6$(Ti, Tb, Si)$_{12}$O$_{64}$. Orthorhombic. Polykras.
Polydymite, Laspeyeres. (Ni, Fe, Co)$_4$S$_5$. Isometric.
POLYHALITE, *Stromeyer.* $K_2MgCa_2(SO_4)_4+2\ H_2O$. Orthorhombic. Krugite, *Precht*; ischélite; polyhalites.
Polyhalite de Vic. See Glauberite.
Polyhalite gris. See Glauberite.
Polyhalites. See Polyhalite.
Polyhydrite, Breit. SiO_2, Fe_2O_3, FeO, $Al_2O_3H_2O$, etc. Amorphous.
Polykras. See Polycrase.
Polylite. See Pyroxene.
Polylithe. See Pyroxene.
Polylithionite. See Lepidolite.
POLYMIGNITE, *Berz.* TiO_2, ZrO_2, Fe_2O_3, YO, Ce_2O_3, etc. Orthorhombic. Polymignyte.
Polymignyte. See Polymignite.
Polysphaerite. See Apatite and Pyromorphite.
Polystomous augite spar. See Pyroxene.
Polytelite. See Tetrahedrite.
Polytelite, Glocker. 4 (Pb, Fe, Ag, Zn)S. Sb_2S_3. Lichtes weissgültigerz pt.; white silver.
Polyxen. See Platinum.
Ponce. See Pumice.
Pontellarite. See Albite.
Poonahlite. See Scolecite.
Poonalith. See Scolecite.
Porcelain. See Ekebergite.
Porcelain clay. See Kaolinite.
Porcelain earth. See Kaolinite.
Porcelain jasper. See Kaolinite.
Porcelain-spar. See Ekebergite.
Porcellanerde. See Kaolinite.
Porcellanite. See Kaolinite.
Porcellanjaspis. See Kaolinite.
Porcellanspath. See Ekebergite.
Porcellophite. See Serpentine.
Porpezite. See Gold.
Porricin. See Pyroxene.
Portite, Meneghini and *Bechi.* $Al_2(SiO_3)_3+2H_2O$. Orthorhombic.
Portor. See Calcite.
Porzellanerde. See Kaolinite.
Porzellanit. See Ekebergite.
Porzellanspath. See Ekebergite.
Porzellanthon. See Kaolinite.
POSEPNYITE, *von Schröckinger.* $C_{22}H_{26}O_4$.

Potasse nitratée. See Nitre.
Potasse sulfatée. See Aphthitalite.
Potash alum. See Kalinite.
Potash copperas. See Copiapite and Jarosite.
Potash feldspar. See Orthoclase.
Potash harmotome. See Phillipsite.
Potash mica. See Muscovite.
Potash muriate. See Carnallite and Sylvite.
Potash nitrate. See Nitre.
Potash sulphate. See Aphthitalite, Misenite and Taylorite.
Potassium chloride. See Sylvite.
Potstone. See Talc.
Potters' lead ore. See Galenite.
Potters' ore. See Galenite.
Poudre d'argent. See Mica.
Poudre d'or. See Mica.
Pounxa. See Borax.
Pozzuolana. Puzzolana; puzzolano; volcanic ash; volcanic sand.
Prase. See Quartz.
Prasem. See Quartz.
Praseo. See Quartz.
Praseolite. See Fahlunite.
Praseolith. See Fahlunite.
Prasilite, Thomson. A chloritic mineral.
Prasinchalzit. See Pseudomalachite.
Prasine. See Pseudomalachite.
Prasius. See Quartz.
Prasochrome, Landerer.
Precious beryl. See Beryl.
Precious garnet. See Garnet.
Precious opal. See Opal.
Precious serpentine. See Serpentine.
Predazzite Petzholdt. $2\,CaCO_3 . Mg(OH)_2$. Mixture of calcite and brucite (?).
Pregrattit. See Paragonite.
PREHNITE, *Werner.* $H_2Ca_2Al_2(SiO_4)_3$. Orthorhombic. Ædelite, *Walm.*; anhydrous prehnite, *Whitney*; axotomous triphane spar; bostrichites, *Walker*; chiltonite, *Emmons*; chlorastrolite, *Jackson*; chlorastrolith; chrysolite, *Sage*; chrysolithe du Cap, *de Lisle*; coupholite, *Dela.*; edelite, *Walm.*; émeraude du Cap, *Rochon*; gibsonite, *Haid.*; halb zeolith, *Estner*; jacksonite, *Whitney*; koupholite, *Dela.*; prehnite conchoïde, *H.*; schorl en gerbes, *Schreiber*; uigite, *Heddle*; zéolithe verdâtre, *von Born*; zonochlorite.
Prehnite conchoïde. See Prehnite.
Prehnitoid. See Dipyre.
Preunnerite. See Calcite.
Prian, Cornish. A soft white clay, *Pryas.*
Pribramite. See Göthite..
PRICHITE, *Silliman.* $CaO : B_2O_3 : H_2O :: 19 : 23 : 36$. Lime borate; pandermite, *vom Rath.*
Prilépite. See Allophane.
Prismatic amblygon spar. See Amblygonite.
Prismatic ammoniac salt. See Mascagnite.
Prismatic andalusite. See Andalusite.
Prismatic antimony. See Dyscrasite.
Prismatic antimony baryte. See Valentinite.
Prismatic antimony blende. See Kermesite.
Prismatic antimony glance. See Sylvanite.
Prismatic arseniate of copper. See Olivenite.
Prismatic arsenical pyrites. See Arsenopyrite and Leucopyrite.
Prismatic arsenious acid. See Claudetite.
Prismatic augite spar. See Wollastonite.
Prismatic axinite. See Axinite.
Prismatic azure malachite. See Azurite.
Prismatic azure spar. See Lazulite.
Prismatic bismuth glance. See Bismuthinite.
Prismatic black tellurium. See Nagyagite.
Prismatic boracic acid. See Sassolite.
Prismatic borax salt. See Borax.
Prismatic brithyne salt. See Glauberite.
Prismatic calamine. See Calamine.
Prismatic cerium ore. See Allanite.
Prismatic chrysolite. See Chrysolite.
Prismatic cobalt mica. See Erythrite.
Prismatic copper glance. See Chalcocite.
Prismatic copper mica. See Chalcophyllite.
Prismatic corundum. See Chrysoberyl.
Prismatic cryone haloid. See Cryolite.
Prismatic disthene spar. See Cyanite.
Prismatic dystome spar. See Datolite.
Prismatic emerald. See Euclase.
Prismatic emerald malachite. See Euchroite.

Prismatic Epsom salt. See Epsomite.
Prismatic euchlore mica. See Tyrolite.
Prismatic eutome glance. See Sternbergite.
Prismatic feldspar. See Albite.
Prismatic fluor haloid. See Herderite.
Prismatic gadolinite. See Gadolinite.
Prismatic garnet. See Staurolite.
Prismatic Glauber salt. See Mirabilite.
Prismatic gypsum haloid. See Anhydite.
Prismatic habroneme malachite. See Pseudomalachite.
Prismatic halbaryte. See Barite.
Prismatic heavy spar. See Barite.
Prismatic iron mica. See Vivianite.
Prismatic iron ore. See Limonite.
Prismatic iron pyrites. See Marcasite.
Prismatic kouphone spar. See Natrolite.
Prismatic lead baryte. See Leadhillite.
Prismatic lime haloid. See Aragonite and Anhydrite.
Prismatic lirocone malachite. See Lirocouite.
Prismatic manganese blende. See Alabandite.
Prismatic manganese ore. See Pyrolusite.
Prismatic melane glance. See Stephanite.
Prismatic mica. See Muscovite.
Prismatic monoclase haloid. See Hopeite.
Prismatic natron salt. See Natron and Trona.
Prismatic nephrite spar. See Zoisite.
Prismatic nickel pyrites. See Niccolite.
Prismatic nitre salt. See Nitre.
Prismatic olive malachite. See Olivenite.
Prismatic orthoclase haloid. See Anhydrite.
Prismatic petaline spar. See Petalite.
Prismatic purple blende. See Kermesite.
Prismatic pyramidal garnet. See Vesuvianite.
Prismatic quartz. See Iolite.
Prismatic retin baryte. See Triplite.
Prismatic Scheele ore. See Wolframite.
Prismatic scheelerz. See Wolframite.
Prismatic scheelium ore. See Wolframite.
Prismatic Schiller spar. See Anthophyllite.
Prismatic sulphur. See Sulphur.
Prismatic talc mica. See Ripidolite and Prochlorite.
Prismatic tantalum ore. See Tantalite.
Prismatic tellurium glance. See Nagyagite.
Prismatic titanium ore. See Titanite.
Prismatic topaz. See Topaz.
Prismatic triphane spar. See Spodumene.
Prismatic vitriol. See Chalcanthite.
Prismatic vitriol salt. See Goslarite.
Prismatic white antimony. See Cervantite and Valentinite.
Prismatic zinc baryte. See Calamine.
Prismatic zinc ore. See Zincite.
Prismatischer arsenikkies. See Arsenopyrite.
Prsimatischer spiesglas-glanz. See Bournonite.
Prismatisches weisses golderz. See Sylvanite.
Prismatoidal antimony glance. See Stibnite.
Prismatoidal augite spar. See Epidote.
Prismatoidal azure spar. See Lazulite.
Prismatoidal copper glance. See Jamesonite.
Prismatoidal garnet. See Staurolite.
Prismatoidal gypsum haloide. See Gypsum.
Prismatoidal halbaryte. See Celestite.
Prismatoidal kouphone spar. See Stilbite.
Prismatoidal lead baryte. See Lanarkite.
Prismatoidal manganese ore. See Manganite.
Prismatoidal Schiller spar. See Hypersthene.
Prismatoidal sulphur. See Orpiment.
Prismatoidischer kupferglanz. See Bournonite.
Prismatoidischer zinkphyllit. See Hopeite.

PROCHLORITE, *Dana*. $H_2(Fe, Mg)_5Al_2(OH)_6(SiO_4)_3$. Hexagonal. Blättriger chlorit, *Wern.*; chlorite, pt., *von Kob.*; chlorites lamellosus, *Wern.*; grängesite, *Hisinger*; grengesite; hexagonal chlorite; lapis colubrinus lamellosus, *Wall.*; lophoit, *Breit.*; mica pt., *Wall.*; ogcoite, *Breit.*; ogkoit,

PROCHLORITE—Continued.
Breit.; peach; prismatic talc mica; rhombohedral talc mica; ripidolite, *G. Rose*; speckstein, *Cronst.*; strahlige grüneisenerde, *Delarne*; talc mica, *Mohs*; talgsten pt., *Cronst.*; telgsten, pt., *Wall.*

Proidonia. See Proidonite.

Proidonin. See Proidonite.

PROIDONITE, *Scacchi.* SiF_4. Proidonia; proidonin.

Prosilithe. See Fahlunite.

Prosopite, Scheerer. Al_2O_3 42.33, CaF_2 32.02, SiF_4 10.81, H_2O 14.84. Orthorhombic.

Proteite. See Pyroxene.

Protheite. See Pyroxene.

Protherite. See Vesuvianite.

Protobastite. See Enstatite.

Proto-carbure d'hydrogène. See Marsh gas.

Protochloride of iron. See Molysite.

PROTOCHLORITE, *Schrauf.* $m(Al_2SiO_5).\ n(R_2SiO_4)+pH_2O$.

Protosulfid of iron. See Troilite.

Protovermiculite. See Vermiculite.

Protoxide de cuivre. See Cuprite.

Protoxide of nickel. See Bunsenite.

Protoxide of uranium. See Uraninite.

PROUSTITE, *Beudant.* $3Ag_2S.\ As_2S_3$. Hexagonal. Argent arsénio-sulfuré; argent rouge; argent rouge arsenicale, *Proust*; argent rouge arsénié, *Necker*; argentum rude rubrum translucidum carbunculis simile; arsenical silver ore, *Beud.*; arsenical silver blende, *Naum.*; arsenikalisches rothgültigerz; arseniksilberblende; arsensilberblende; durchsichtig rodtguldenerz, *Agric.*; lichtes rothgültigerz; light pyrargyrite; light red silver ore; mina de plata roxa, *Herrg.*; minera argenti rubra pellucida, *Wall.*; red silver; rothgiltigerz; rothgültigerz; rubinblende, *Haus.*; ruby blende; ruby silver ore, *Hill*; schön rubin rothguldenerz, *Gesner.*

Prunnerite. See Calcite.

Prussian blue, native. See Vivianite.

Prussiate de fer natif. See Vivianite.

Pryan. See Cassiterite and Prian.

Pryan lode. See Cassiterite.

Pryan ore. See Cassiterite.

Pryan tin. See Cassiterite.

Przibramite. See Göthite and Sphalerite.

Psathurose. See Stephanite.

Psathyrin. See Xyloretinite.

Psathyrit. See Xyloretinite.

Psaturose. See Stephanite.

Pseudoadamantes. See Quartz.

Pseudoalbite. See Andesite.

Pseudoapatite. See Apatite.

Pseudobiotite, Knop. An altered biotite from Kaiserstuhl.

PSEUDOBROOKITE, *Koch.* $FeTiO_3$(?). Orthorhombic.

Pseudo-chrysolite.

PSEUDOCOTUNNITE, *Scacchi.* $PbCl_2$. KCl. Crystalline.

Pseudodiamond. See Quartz.

Pseudogalena. See Sphalerite.

Pseudogalena nigra compacta. See Uraninite.

Pseudogalena picea. See Uraninite.

Pseudogaylussit. See Gaylussite.

Pseudohypersthene. See Pyroxene.

Pseudolibethenite. See Libethenite.

Pseudolite. See Talc.

PSEUDOMALACHITE, *Hausmann.* $Cu_3(PO_4)_2$. $Cu_2(OH)_2$. Monoclinic. Copper diaspore; cuivre hydrophosphaté; cuivre phosphaté, *H.*; dihydrit, *Herm.*; ehlit, *Breit.*; habroneme malachite, *Mohs*; hemi-prismatic dystome-malachite, *Mohs*; hydrous phosphate of copper, *Allan*; hypoleimme; kupferdiaspore, *Kuhn*; lunnit, *Bernh.*; phosphate of copper, *Phil.*; phosphorchalcite, *von Kob.*; phosphorkupfer, *Karst.*; phosphorkupfererz, *Wern.*; phosphorsaures kupfer pt., *Karst.*; phosphorochalcit, *Glock.*; prasin-chalzit, *Breit.*; prasine; prismatic habroneme malachite, *Mohs*; ypolèimo, *Beud.*

Pseudonatrolite, Grattarola. Near Natrolite. Orthorhombic.

Pseudonepheline. See Nephelite.

Pseudonephrite. See Amphibole.

Pseudophite. See Penninite.

Pseudoquartzite.

Pseudosaphir. See Iolite.

Pseudoscapolite. See Pyroxene.

Pseudosommite. See Nephelite.

Pseudosteatite. See Halloysite.

Pseudotalcite.

Pseudotriplite. See Triplite.

PSILOMELANE, *Haid.* 4M
Ca, Mg, Cu)O.
hematite; 1

PSILOMELANE—Continued. black manganese ore; derb brunsten, *Wall.*; groroïlite; hartmangan; hartmanganerz; hématite noire; magnesia indurata, *Cronst.*; manganerz, *Karst.*; manganese hydrous oxide; manganese oxide; manganèse oxydé noir brunâtre; ochro de manganesa, *Herrg.*; oxide of manganese; peroxyde de manganèse potassé, *Dufr.*; pisolitic black iron ore; psilomelanite; schwarzbraunsteinerz pt., *Wern.*; schwarzeisenstein pt., *Wern.*; schwarzer glasskopf, *Wern.*; uncleavable manganese ore, *Mohs*; verhärtetes schwarzbraunsteinerz pt., *Emmerling*; verhärtetes schwarzmanganerz *pt.*, *Karst.*

Psilomelanite. See Psilomelane.

Psimythite. See Leadhillite.

PSITTACINITE, *Genth.* $3\,Pb_3V_2O_8 . Cu_3V_2O_8 . 6\,Cu(OH)_2 . 12\,H_2O$.

Pterolite. See Lepidomelane.

Pterolith. See Lepidomelane.

Ptilolite. $RAl_2Si_{10}O_{24} + 5\,H_2O$.

PUCHERITE, *Frenzel.* $Bi_2V_2O_8$. Orthorhombic.

Pudding-stone. See Calcite.

Puflerite. See Phillipsite.

Puletta of Elba. See Hematite.

Pumice. A porous feldspathic scoria; bimsstein, *Wern.*; empyrodox quartz, némate; perlstein pumiciforme, *Tondi*; ponce; pierre ponce; pumite.

Pumite. See Pumice.

Punahlit. See Scolecite.

Punamustein. See Amphibole and Jadeite.

Punctachat. See Quartz.

Purple blende. See Kermesite.

Purple copper. See Bornite.

Puscklinite. See Epidote.

Puschkinite. See Epidote.

Puzzolana. See Pozzuolana.

Puzzolano. See Pozzuolano.

Pycnite. See Topaz.

Pycnotrope. See Serpentine.

Pyknit. See Topaz.

Pyknophyllit. Near Pinite.

Pyknotrop. See Serpentine.

Pyrallolite. See Iolite and Talc.

Pyramidal adiaphane spar. See Gehlenite.

Pyramidal cerium baryte. See Yttrocerite.

Pyramidal copper pyrites. See Chalcopyrite.

Pyramidal euchlore malachite mica. See Torbernite.

Pyramidal euchlore mica. See Torbernite.

Pyramidal feldspar. See Wernerite.

Pyramidal garnet. See Vesuvianite.

Pyramidal honeystone. See Mellite.

Pyramidal kouphone spar. See Apophyllite.

Pyramidal lead baryte. See Wulfenite.

Pyramidal manganese ore. See Hausmannite.

Pyramidal mellichrome resin. See Mellite.

Pyramidal pearl kerate. See Calomel.

Pyramidal scheelium baryte. See Scheelite.

Pyramidal tellurium glance. See Nagyagite.

Pyramidal tin ore. See Cassiterite.

Pyramidal titanium ore. See Octahedrite.

Pyramidal tungsten. See Scheelite.

Pyramidal zeolite. See Apophyllite.

Pyramidal zircon. See Zircon.

Pyramidoprismatic baryt. See Strontianite.

Pyrantimonite. See Kermesite.

Pyrapholith. See Orthoclase.

Pyrargillite. See Fahlunite.

PYRARGYRITE, *Glocker.* $3\,Ag_2S . Sb_2S_3$. Hexagonal. Ærosit, *Selb*; antimonial red silver; antimonial silver blende, *Naum.*; antimonial sulphuret of silver; antimonsilberblende, *Glock.*; argent antimonié sulfuré pt., *H.*; argent rouge antimoniale, *Proust*; argent rouge antimonié, *Necker*; argentum arsenico pauco sulphure et ferro mineralisatum pt., *Wall.*; argentum rubri coloris pt., *Gesner*; argentum rude rubrum pt., *Agric.*; argyrithrose, *Beud.*; dark-red silver ore; dunkles rothgültigerz, *Wern.*; gemein rothguldenerz, *Gesner*; lichtes rothgültigerz pt., *Wern.*; light pyrargyrite pt.; light-red silver ore pt.; mina de plata roxa, *Herrg.*; mine d'argent rouge; minera argenti rubra nigrescens, *Wall.*; minera argenti rubra opaca, *Wall.*; red silver pt.; red silver ore pt., *Hill*; rhombohedral ruby blende, *Mohs*; rothgiltigerz; roth-

PYRARGYRITE—Continued.
golderz, *Agric.*; rothgulden; rothgültigerz; rothgylden pt., *Wall.*; rubinblende pt., *Mohs*; ruby blende; ruby silver ore pt., *Hill*; silberblende, *Breit.*; sulphuretted antimonial silver.

Pyraurite. See Pyroaurite.

Pyrauxite. See Pyrophyllite.

Pyrenäit. See Garnet.

Pyreneite. See Garnet.

Pyrgom. See Pyroxene.

Pyrichrolite. See Pyrostilpnite.

PYRITE. FeS_2. Isometric. Bisulphuret of iron, *Thom.*; brazil; büchsenstein; cubic pyrites; dipyrite; eisenkies, *Germ.*; fer sulfuré, *Fr.*; fer sulfuré aurifère, *H.*; fer sulfuré épigène; fer sulfuré jaune, *Dufr.*; hexahedral iron pyrites, *Mohs*; iron pyrites, *Phil.*; iron sulphide; iron sulphuret; kies pt., *Wall.*; kis, *Agric.*; marcasite, *Haid.*; marchasita, *Henckel*; martial pyrites, *Broch.*; mundic, *Hill*; nodular pyrites, *Wall.*; pirita de azufre, *Herrg.*; podar; πυρίτης, *Diosc.*; pyrite jaune; pyrites pt., *Plin.*; pyrite sulfureuse; radiated pyrites; schwefelkies, *Germ.*; sulphur; σπῖνος, *Theoph.*; sulphuret of iron; svafelkies pt., *Wall.*; xanthopyrites, *Glock.*

NICKELIFEROUS: Nickel iron pyrites.

SELENIFEROUS: Selenkies.

STANNIFEROUS: Ballesterosite, *Schulz* and *Paillette.*

TELLURIFEROUS: Telaspyrine, *Shep.*

THALLIFERUS: Kies thallium haltender, *Breit.*

Pyrite, arsenical. See Asenopyrite, Leucopyrite, and Löllingite.

Pyrite arsenical argentifère. See Arsenopyrite.

Pyrite, auriferous. See Pyrite.

Pyrite blanche. See Arsenopyrite and Marcasite.

Pyrite capillaire. See Millerite.

Pyrite, capillary. See Millerite.

Pyrite, cellular. See Marcasite.

Pyrite, cockscomb. See Marcasite.

Pyrite, copper. See Chalcopyrite.

Pyrite cuivreuse. See Chalcopyrite.

Pyrite d'argent. See Arsenopyrite.

Pyrite de Boom. See Marcasite.

Pyrite d'étain. See Stannite.

Pyrite, erubescent. See Bornite.

Pyrite hépatique. See Marcasite.

Pyrite, hydrous. See Marcasite.

Pyrite, iron. See Pyrite and Marcasite.

Pyrite jaune. See Pyrite.

Pyrite lamelleuse en crêtes de coq. See Marcasite.

Pyrite, magnetic. See Troilite and Pyrrhotite.

Pyrite martiale. See Pyrite.

Pyrite, prismatic arsenical. See Millingite.

Pyrite, prismatic iron. See Marcasite.

Pyrite, radiated. See Marcasite.

Pyrite, spear. See Marcasite.

Pyrite sulfureuse. See Pyrite.

Pyrite, tin. See Stannite.

Pyrite, variegated. See Bornite.

Pryite, white iron. See Marcasite.

Pyrites. Equals Pyrite.

Pyrites aerosus. See Chalcopyrite.

Pyrites albus. See Arsenopyrite.

Pyrites aureo colore. See Chalcopyrite.

Pyrites candidus. See Arsenopyrite.

Pyrites cupri griseus. See Tetrahedrite.

Pyrites en prismes hexagonales. See Pyrrhotite.

Pyrites flavus. See Chalcopyrite.

Pyrites fuscus. See Marcasite and Pyrrhotite.

Pyrites vivus. See Corundum.

Pyritolamprite. See Dyscrasite.

Pyritous copper. See Chalcopyrite.

Pyritous copper, variegated. See Bornite.

PYROAURITE, *Igelström.* $Fe^{III}_2Mg_6(OH)_{16}+3H_2O$. Hexagonal. Pyraurite.

Pyrochlore. See Microlite.

PYROCHLORE, *Wöhler.* Cb_2O_5, TiO_2, ThO_2, CaO, CeO, Na_2O, etc. Isometric. Fluochlor, *Herm.*; hydrochlor, *Herm.*; octahedral titanium ore, *Mohs*; tantalite.

PYROCHROITE, *Igelström.* $Mn(OH)_2$. Hexagonal.

Pyroclasite. See Guano.

Pyroconite. See Pachnolite.

Pyrodmalite. See Pyrosmalite.

Pyroelectric wavellite. See Wavellite.

Pyroemerald. See Fluorite.

Pyroguanite. See Guano.

Pyroïdesine, Shep. Meteoric mineral near Serpentine.

Pyroklasit. See Guano.

PYROLUSITE, *Haidinger*. MnO_2. Orthorhombic. Anhydrous binoxide of manganese, *Turner*; black wad; braunstein, grauer; brunsten, *Wall.*; calvonigrite; capillary pyrolusite; graubraunstein, *Wern.*; graubraunsteinerz, *Haus.*; gray manganese; gray manganese ore, *James.*; gray oxide of manganese; lapis manganensis pt., *Cæsalp*; lichtes graumanganerz, *Breit.*; magnesia pt., *Wall.*; magnesia nigra; magnes qui niger est et feminei sexus, ideoque sine viribus; manganaise grise pt., *Forst.*; manganerz, grauer; manganèse pt.; manganèse gris, *Broch.*; manganese oxide; manganhyperoxyd, *Leonh.*; molybdænum magnesii, *Linn.*; oxide of manganese; oxide of manganese argentine; peroxyde de manganèse; prismatic manganese ore, *Haid.*; prismatoidal manganese ore; savon de verrières; weichbraunstein; weichmangan; weichmanganerz.

LEPTONEMERZ, *Breit.*

Pyromelane, Shepard. "Titanate of alumina and iron."

Pyromeline. See Morenosite.

PYROMORPHITE, *Beudant*. $Pb_5Cl(PO_4)_3$. Hexagonal. Braunbleierz, *Schültze*; brown lead ore; *James.*; brown lead spar; bryoïde; buntbleierz; green lead ore, *James.*; green lead spar; grün blyspat, *Wall.*; grünbleierz, *Schültze*; grünbleyerz, phosphorsäurehaltig, *Klapr.*; mine de plomb brune; mine de plomb verte; minera plumbi viridis pt., *Wall.*; muscoïde; muschliges phosphorblei, *Karst.*; pencil stone from Merigomish, N. S.; phosphate of lead, *Phil.*; phosphate of lead, arsenicated; phosphorblei, *Karst.*; phosphorsaures blei; plomb brun; plomb phosphaté, *Haüy*; plomb verte, *Broch.*; polychrom; rhomboidal lead spar; traubenblei, *Haus.*

POLYSPHÆRITE, *Breit.* Cherokine, *Shep.*; miesite, *Breit.*; nussierite, *Danhauser.*

Pyrope. See Garnet.

Pyrophane. See Opal.

Pyrophosphorite, Shepard, jr. $Mg_2P_2O_7$. $4\,Ca_2P_2O_7$. $Ca_3(PO_4)_2$.

PYROPHYLLITE, *Hermann*. $H_2Al_2(SiO_3)_4$. Orthorhombic. Agalmatolite pt., *Phillips*; agalmatolith pt.; erdige talc; lardite; mother of diaspore pt.; pagodite pt. pencil stone pt.; pierre à magot pt.; pierre de lard pt.; pierre de porc pt.; pyrauxit, *Breit.*; talc glaphique, *Haüy.*

Pyrophysalite. See Topaz.

Pyropissite, Kenngott. An earthy coal-like substance. Uranelaïne.

Pyroretin. See Pyroretinite and Stanekite.

PYRORETINITE, *Dana*. $C_{10}H_{14}O$. Pyroretin pt., *Reuss.*

Pyrorthite. See Allanite.

Pyroscheererite, Krauss. Distillation product of Könlite.

PYROSCLERITE, *Dana*. $(Fe, Mg)_6(Al, Cr)_2Si_4O_{17}+4\,H_2O$. Orthorhombic or monoclinic. Pyrosklerit, *von Kobell.*

Pyrosiderite. See Göthite.

Pyrosklerit. See Pyrosclerite.

PYROSMALITE, *Karsten*. $H_7(Fe, Mn)_4(FeCl)(SiO_4)_4$. Hexagonal. Fer muriaté, *H.*; muriate of iron, *Jameson*; native muriate of iron, *Jameson*; pyrodmalit, *Haus.*; pyrosmalith, *Karsten*; wesentlicher bestandtheil salzsaures eisenoxyd, *Haus.*

Pyrodmalit. See Pyrosmalite.

Pyrosmalith. See Pyrosmalite.

Pyrosmaragdus. See Fluorite.

Pyrostibine. See Kermesite.

Pyrostibite. See Kermesite.

PYROSTILPNITE, *Dana*. $3\,Ag_2S$. Sb_2S_5. Orthorhombic. Feuerblende, *Breit.*; fireblende, *Dana*; pyrichrolite, *Adam.*

Pyrotechnite. See Thenardite.

PYROXENE, *Haüy*. $RSiO_3$. Monoclinic. Basaltes pt., *Cronst.*; corneus pt., *Wall.*; euchsiderite; euchysiderite; grünerde, crystallisirte; hôte ou étranger dans le domaine du feu, *Haüy*; porricin; pseudo-scapolite, *Nord.*

NON ALUMINOUS

HEDENBERGITE, *Berz.*: $CaFe(SiO_3)_2$. Asteroite, *Igels.*; bolopherite, *Breit.*; iron lime pyroxene; lotalite, *Severgin*; pyroxenus diagonalis, *Breit.*; pyroxène ferrugineux. *Dufr.*

PYROXENE—Continued.

JEFFERSONITE, *Keating* and *Vanuxem*: (Ca, Mn, Fe, Zn, Mg)SiO_3. Lime-iron-manganese-zinc pyroxene; polystomous augite spar, *Keating*.

MALACOLITE, *Abildgaard*: (Ca, Mg)SiO_3. Alalite, *Bonv.*; basaltes spatosus, *Cronst.*; canaanite; chromdiopsid; diopside, *Haüy*; diopside bacillaire, *Dufr.*; diopside granuliforme, *Dufr.*; malacolith; malacon, *Scheer.*; malakon; mussite, *Bonv.*; pyroxène stéatiteux; traversellite, *Scheer.*; white coccolite; white malacolite.

MANGAN HEDENBERGITE: Ca(Fe, Mn)$(SiO_3)_2$. Lime-iron-manganese pyroxene; pyroxène manganésien.

SAHLITE, *d'Andrada*: (Ca, Mg, Fe)SiO_3. Asbestus pt.; augit, körniger, *Karst.*; baicalit, *Renovanz*; baikalite, *Karst.*; broncit; bronzite pt.; coccolite, *d'Andrada*; coccolithe; diallage pt., *H.*; diallage vert, *H.*; diopside pt.; émeraudite, *Daub.*; funkite, *Dufr.*; green diallage; hypersthene pt.; kokkolit, *Wern.*; lime-magnesia-iron pyroxene; malacolit pt.; pierre à noyaux; proteite; protheite, *Ure*; pseudo-hypersthene; salait; salit; smaragdit pt.; strahlstein, körniger; talkartiger diallage, *Haus.*

SCHEFFERITE, *Michaelson*. (Ca, Mg, Mn)SiO_3. Eisenschefferit; lime-magnesia-manganese pyroxene: richterite, *Breit.*

ALUMINOUS VARIETIES.

AUGITE, *Werner*: (Ca, Mg, Fe) $(Al, Fe)_2$ SiO_6. Aluminiferous hedenbergite; aluminous lime-magnesia-iron pyroxene; aluminous diallage; augit, muscheliger; augitspath; basaltine, *Kirw.*; basaltischer hornblende pt., *Wern.*; chrome augite; lavroffite; lawrowit, *Koksch.*; maclureite, *Nuttal*; maclurite; octahedral basaltine, *Kirw.*; paratomous augite spar, *Mohs*; pentaklasite, *Haus.*; pierre d'Arménie, *Beud.*; pyroxène noir; schorl noir, *de Lisle*; schorl noir en prisme à huit pans terminé par une pyramide dièdre, *Faujas*; schorl octaèdre obliquangle tronqué, *Démeste*; schorl opaque qui paroissent dériver d'un octaèdre rhomboïdal, *de Lisle*; schorl opaque rhomboïdal pt., *de Lisle*; silbeloit; vanadin augit, *Koksch.*; viriscite, *Dela.*; volcanite, *Dela.*; volcanic schorl.

FASSAITE, *Werner*: (Mg, Fe)$CaSi_2O_6$. (Mg, Fe)$(Al, Fe)_2SiO_6$. Fassait; pyrgom, *Breit.*

HUDSONITE, *Beck*: (Ca, Fe)$(Si, Al_{4/3})$ O_3. Polylite, *Thom.*; polylithe.

LEUCAUGITE, *Dana*: (Ca, Mg)$(Si, Al_{4/3})O_3$. Aluminous lime-magnesia pyroxene.

PYROXENE ROCKS: Dolerite; eulysyte; melaphyre.

HYDROUS DIALLAGE.

OMPHACITE: Omphazit.

URALITE, *Rose*: Ouralite.

Pyroxène ferrugineux. See Amphibole and Pyroxene.

Pyroxène manganésien. See Pyroxene.

Pyroxène noir. See Pyroxene.

Pyroxène stéatiteux. See Pyroxene.

Pyroxenus diagonalis. See Pyroxene.

PYRRHITE, *G. Rose*. Nb_2O_5, ZrO_2. Isometric.

Pyrrhoarsenite.

Pyrrholite. See Pinite.

Pyrrhosiderite. See Göthite.

Pyrrhotine. See Pyrrhotite.

Pyrrhotite. See Troilite.

PYRRHOTITE, *Breithaupt*. Fe_7S_8. Hexagonal. Fer sulfuré ferrifère, *Haüy*; fer sulfuré magnétique, *Fr.*; iron sulphide; iron sulphuret; kröberite, *Forbes*; leberkies pt., *Leonh.*; leberkise, *Beud.*; liver pyrites; magnetic iron pyrites; magnetic pyrites, *Kirw.*; magnetic sulphuret of iron; magnetischer kies, *Wern.*; magnetischer pyrrotin, *Breit.*; magnetkies, *Germ.*; magnetopyrite, *Glock.*; magnetic sulphuret of iron; minera hepatica pt., *Wall.*; pyrites en prismes hexagonales, *Forst.*; pyrites fuscus, *Wall.*; pyrrhotine, *Beud.*; pyrrotin pt., *Breit.*; rhombohedral iron pyrites, *Mohs*; vattenkies, *Wall.*

Pyrrolithe. See Pinite.

Pyrrotin. See Pyrrhotite.

Quadrisilicate d'alumine. See Dipyre de Zimmapan.

QUARTZ, *Wallerius*. SiO_2. Hexag- Κρυσταλλος, *Theoph.*: a *Plin.*; kiesel.

QUARTZ—Continued.

kiselstein, *Agric.*; quartzum candidissum; quertze, *Agric.*; rhombohedral quartz, *Mohs*; silex, *Plin.*; silĭce, *Fr.*; spar, *Miners.*

VITREOUS VARIETIES.

AMETHYST: *Ἀμέθυστου, Theoph.*; amethystoline; auriferous amethyst; Bohemian ruby; manganquartz; quartz hyalin violet.

AVENTURINE QUARTZ: Aventurine quartz; green aventurine; pietra aventurina, *Petr.*; sandastros.

CAT'S EYE: Katzenauge; occhio di gatto, *Petr.*; œil de chat; ommailouras, *Dela.*; quartz hyalin amianté, *Cordier*; quartz agathe chatoyant, *Dela.*

CITRINE: Bohemian topaz; citron; false topaz; honey-yellow quartz; impure topaz; occidental topaz; quartz hyalin jaune; quartz jaune; quarz citrino, *Nap.*; topaze de Bohême; topaze d'Inde; topaze occidental; topaze de Saxe; topazine quartz; yellow quartz.

FERRUGINOUS QUARTZ: Eisenkiesel, *Wern.*; hematitic quartz; hyacinthe de Compostella; iron flint, *Jameson*; quartz hématoïde; quartz rubigneux sinople, *Brong.*; sinople, *Kirwan.*

FETID QUARTZ, *Bakewell*: Stinkquarz.

IMPURE QUARTZ: Quartz, actinolitic; quartz, arenaceous; quartz, auriferous; quartz, chloritic, etc.

KONILIT.

MILKY QUARTZ, *Phil.*: Fat quartz, *Kirw.*; fettquarz; greasy quartz; milchquarz, *Wern.*; pearly quartz; quartz hyalin gras; quartz laiteux, *Haüy.*

ROCK CRYSTAL: Bergcrystal; bergkristal; Bohemian diamond; cailloux d'Alençon; cailloux de Médoc; cailloux du Rhin; capped quartz; Cornish diamond; cross-course spar; diamant d'Alençon; doubly capped quartz; fibrous quartz; faserquarz; glassy quartz; hacked quartz; iridescent quartz; iris; irised quartz; Kilpatrck quartz, *Adam*; mock diamond; mountain crystal; occidental diamond; olive quartz; pseudo-adamantes; pseudo-diamond; quartz hydre, *Dufr.*; quartz en chemise; quartz guilloché; quartz hyalin; quartz hyalin irisé; quartz limpide; quartz limpide aérohydre; Quebec diamond; radiated quartz; Rheinkiesel; rubace; rubasse; Schiller quartz; Tolfa diamond; white stone; white topaz.

ROSE QUARTZ: Rosenquarz; rose-red quartz; rosy red quartz; rubis de Bohême.

SAGENITIC QUARTZ: Cupid's pencils; veneris crinis, *Plin.*; Venus' pencils.

SIDERITE: Blue quartz; false sapphire; occidental sapphire; plasma di zaffiro, *Nap.*; quartz hyalin saphirine, *Mong.*; saphir de France; saphir de Puy-en-Velay; saphirine; sapphire quartz; sapphirine; siderit quartz.

SMOKY QUARTZ: Brown quartz, *Phillips*; cairngorm stone, *Scotch*; cairngorum; Dungiven crystals; morion; mormorion; quartz enfumé, *H.*; quartz hyalin enfumé; rauchquarz, *Germ.*; smoke quartz; smoky topaz.

STAR QUARTZ: Asteriated rock crystal; sternquarz.

CHALCEDONIC VARIETIES.

AGATE: *Ἀχάτης, Theoph.*; achat; achates; achatjaspis; agate jasper; agate mousseuse; agate orientale; agate périgone; agate rubanée; agate versicolore; agate zonaire; bandachat; brecciated agate; cerachates, *Plin.*; circle agate; coraline agate; dendrachates, *Plin.*; dendritic agate; eye agate; eye stone; festungsachat; fortification agate; hæmachates; jaspachates, *Plin.*; korallenachat; leonine; leucachates, *Plin.*; leucophthalmus; Mocha stone; mochos; Mokka-stein; moosachat; moss agate; occidental agate; panther agate; pebble; phasachates; punctachat; quartz agate; quartz agathe arborisé; quartz agathe dendrètique, *H.*; ribbon agate; ruin agate; Scotch pebble; silex agathe; triophthalmus, *Plin.*; trummerachat; wolkenachat; zoned agate.

BASANITE: Basanites, *Plin.*; cornéenne Lydienne, *Dela.*; kieselschiefer, *Wern.*; lapis Lydius; Lydian stone, *James.*; lydit; phtamite; phthanite;

QUARTZ—Continued.

phthanyte; pierre de Lydie; pierre de touche; quartz Lydian; quartz opaque noir; quartz argillifère schistoïde, *H.*; quartz agathe schistoïde, *Lucas*; siliceous schistus, *Kirw.*; touchstone.

CARNELIAN: Σάδιον, *Theoph.*; agates fere pellucida colore rubescente, *Wall.*; agathe cornaline; carneol, *Agric.*; cornaline, *Brochant*; cornaline de vieilles roches; cornalite; karneol; quartz agathe cornaline; quartz agathe sardoine, *H.*; sard; sarda, *Plin.*; sardachates, *Plin.*; sardoine; sardoine panachée, *H.*; semicarnelian; silex cornaline, *Brong.*; stygmite.

CHALCEDONY: Ἰασπις pt., *Theoph*; agathe vixpellucida nebulosa colgriseo ore mixta, *Wall.*; brown chalcedony; calcédoine; caryat; chalcedon; chalcedonis, *Agric.*; cloudy chalcedony; enhydrite; enhydros; jaspis pt.; kalzedon; murrhina, *Plin.*; occidental chalcedony; oriental chalcedony; pierre de poix, *Daubenton*; quartz agathe calcédoine; rainbow chalcedony; silex calcédoine, *Brong.*; viridul.

CHRYSOPRASE: Chrysoprasium; mère d'émeraude, *Nonnull*; quartz agathe vert de pomme, *Deborn.*

COTTERITE, *Harkness.*

FLINT, *Kirwan*: Banded flint; battle quartz; calcédoine silex; feuerstein, *Wern.*; globular quartz; pedernal, *Herrg.*; pierre à briquet; pierre à feu; pierre à fusil; quartz agathe pyromaque; quartz silex; selce, *Petr.*; silex; silex de la craiè.

HORNSTONE, *Phillips*: Banded chert; chert; hornfels; hornstein; hornstein, infusible; hornstein, splittriger; keratite, *Dela.*; néopêtre; petrosilex; pierre de corne; quartz agate grossière; quartz néopêtre; silex corné.

ONYX: Ὀνυχιον, *Theoph.*; chalcedonyx; nicolo; onicolo; onyx agate; quartz agathe onyx, *H.*; quartz jaspe onyx.

PISOLITIC QUARTZ.

PLASMA: Bloodstone; capinas, *King*; heliotrope, *Wern.*; jaspe sanguine; jaspis pt., *Plin.*; prasius, *Plin.*;

QUARTZ—Continued.

quartz agathe ponctué; Stephanstein; St. Stephen's stones.

PRASE, *de Lisle*: Green quartz; praem; prasio, *Petr.*; quartz agathe calcédoine vert obscure, *H.*; quartz agathe prase; quartz hyalin vert obscure.

SARDONYX.

SILICEOUS SINTER: Bhurstone, *Allan*; cellular quartz, *James.*; molarite, *Dela.*; passyite; quartz agathe mollaire, *H.*; quartz carié, *de Lisle*; quartz informe, *Deborn.*; quartz sinter; silex meulière cellulaire, *Brong.*

JASPER.

Agate terreuse; bandjaspis; basalt jasper; basalt jaspis; brown jasper; diaspero, *Nap.*; Egyptian jasper; Egyptian pebble; ferruginous jasper; globular jasper; hæmatitis, *Plin.*; iaspis; jaspe; jaspe rubané; jaspis; jaspopal; kugeljaspis; landscape jasper; mangan jasper; quartz agathe onyx opaque, *H.*; quartz jaspe; quartz jaspe rouge; pierre à lancette; red porphyry; ribbon jasper; roman red jasper; selce d'Egitto, *Nap.*; silex pt.; striped jasper.

PSEUDOMORPHOUS QUARTZ.

BABEL QUARTZ.

BECKITE, *Dufr.*

FULGURITE: Astraphyalite; ceraunian sinter.

HAYTORITE, *Tripe.*

SILICIFIED SHELLS: Silicified coral.

SILICIFIED WOOD: Agatized wood; chalcedonified wood; holzstein; petrified wood; wood stone.

TABULAR QUARTZ.

SANDSTONES.

ITACOLUMITE: Elastic quartz; flexible quartz; flexible sandstone; grès élastique, *Broch.*; grès flexible, *Brong.*

NOVACULITE.

QUARTZOSE SANDSTONE: Breccia: granular quartz; grès, *Broch.*; quartz grès; quartzose conglomerate; sandstein.

Quartz aérohydre. See **Quartz.**

Quartz agate or agathe.

Quartz agathe arbor

Quartz agathe cachalong. See Opal.
Quartz agathe calcédoine. See Quartz.
Quartz agathe calcédoine vert obscure. See Quartz.
Quartz agathe chatoyant. See Quartz.
Quartz agathe concrétionné thermogène. See Opal.
Quartz agathe cornaline. See Quartz.
Quartz agathe dendrètique. See Quartz.
Quartz agathe grossière. See Quartz.
Quartz agathe onyx. See Quartz.
Quartz agathe onyx opaque. See Quartz.
Quartz agathe ponctué. See Quartz.
Quartz agathe prase. See Quartz.
Quartz agathe pyromaque. See Quartz.
Quartz agathe sardoine. See Quartz.
Quartz agathe schistoïde. See Quartz.
Quartz agathe vert de pomme. See Quartz.
Quartz agathe xyloïde. See Opal.
Quartz aluminifère Tripolien. See Opal.
Quartz, arenaceous. See Quartz.
Quartz argillifère schistoïde. See Quartz.
Quartz, aventurine. See Quartz.
Quartz, blue. See Quartz.
Quartz carié. See Quartz
Quartz citrino. See Quartz.
Quartz conglomerate. See Quartz.
Quartz cubique. See Boracite.
Quartz, empyrodox. See Orthoclase.
Quartz en chemise. See Quartz.
Quarz enfumé. See Quartz.
Quartz, ferruginous. See Quartz.
Quartz, fetid. See Quartz.
Quartz, granular. See Quartz.
Quartz, greasy. See Quartz.
Quartz grès. See Quartz.
Quartz guilloché. See Quartz.
Quartz hématitique. See Quartz.
Quartz hématoïde. See Quartz.
Quartz hyalin. See Quartz.
Quartz hyalin amianté. See Quartz.
Quartz hyalin amorphe. See Quartz.
Quartz hyalin enfumé. See Quartz.
Quartz hyalin gras. See Quartz.
Quartz hyalin irisé. See Quartz.
Quartz hyalin jaune. See Quartz.
Quartz hyalin saphirine. See Quartz.
Quartz hyalin vert obscure. See Quartz.
Quartz hyalin violet. See Quartz.
Quartz, indivisible. See Opal.
Quartz informe. See Quartz.
Quartz, irised. See Quartz.
Quartz jaspe. See Quartz.
Quartz jaspe onyx. See Quartz.
Quartz jaspe rouge. See Quartz.
Quartz jaune. See Quartz.
Quartz laiteux. See Quartz.
Quartz, limpid. See Quartz.
Quartz limpide aérohydre. See Quartz.
Quartz Lydien. See Quartz.
Quartz nectique. See Opal.
Quartz néopêtre. See Quartz.
Quartz opaque noir. See Quartz.
Quartz, pisolitischer. See Quartz.
Quartz prase. See Quartz.
Quartz, radiated. See Quartz.
Quartz résinite. See Opal.
Quartz résinite bleu grisâtre. See Lazulite.
Quartz résinite hydraté. See Opal.
Quartz résinite hydrophane. See Opal.
Quartz résinite ménilite. See Opal.
Quartz résinite opaline. See Opal.
Quartz résinite subluisant brunâtre. See Opal.
Quartz résinite xyloïde. See Opal.
Quartz, rose. See Quartz.
Quartz, rose-red. See Quartz.
Quartz rubigineux. See Quartz.
Quartz silex. See Quartz.
Quartz sinter. See Quartz.
Quartz, spongiform. See Opal.
Quartz, tabular. See Quartz.
Quartz terreux. See Opal.
Quartz thermogène. See Opal.
Quartz, untheilbarer. See Opal.
Quartz, yellow. See Quartz.
Quartzose sandstone. See Quartz.
Quartzum candidissimum. See Quartz.
Quarz. Equals Quartz.
Quebec diamonds. See Quartz.
Quecksilber. See Mercury.
Quecksilberbranderz. See Cinnabar and Idrialite.
Quecksilberfahlerz. See Tetrahedrite.
Quecksilberhornerz. See Calomel.
Quecksilberlebererz. See Cinnabar.
Quellerz. See Limnite.
Quertze. See Quartz.
Quicksilfwer amalgameradt med gedieget silfwer. See Amalgam.
Quicksilver. See Mercury.
Quicksilver antimonite. See Ammiolite.

Quicksilver chloride. See Calomel.
Quicksilver hornore. See Calomel.
Quicksilver iodide. See Coccinite.
Quicksilver-liver-ore. See Cinnabar.
Quicksilver selenide. See Tiemannite.
Quicksilver sulphuret. See Cinnabar.
Quincite. See Spadaite.
RABDIONITE, *von Kobell.* $H_2(Fe''', Mn''')_2O_4$. (Cu, Co, Mn)$(OH)_2$.
Rabdophane. See Rhabdophane.
Rabenglimmer. See Lepidolite.
Raddle. See Hematite.
Radiated acicular olivenite. See Clinoclasite.
Radiated barytes. See Barite.
Radiated blende. See Sphalerite.
Radiated natron. See Trona.
Radiated quartz. See Quartz.
Radiated pyrites. See Marcasite and Pyrite.
Radiated zeolite. See Stilbite.
Radiolite. See Natrolite.
Radiolithe. See Natrolite.
Rädelerz. See Bournonite.
Ragoulki. See Calcite.
Rahtite. See Sphalerite.
RAIMONDITE, *Breithaupt.* $Fe'''_4S_3O_{15} + 7\ H_2O$. Hexagonal.
Rain. See Water.
Rain tin. See Cassiterite.
Rainbow chalcedony. See Quartz.
RALSTONITE, *Brush.* $8\ Al_2F_6 \cdot 3\ (Mg, Ca, Na_2)F_2 + 6\ H_2O$. Isometric.
Rame. See Copper.
Ramirite. See Descloizite.
Rammelsbergite. See Smaltite.
RAMMELSBERGITE, *Dana.* $NiAs_2$. Orthorhombic. Nickel arsenical blanc; nickel arsenide; nickeline blanc; weissnickelkies, *Haus.*; white nickel; white nickel pyrites.
RAMOSITE, *Perry.* $(Al, Fe)_2(Ca, Mg)_4 Si_5O_{17}$.
Rancierite. See Hausmannite.
Rancierite argentine. See Hausmannite.
Rancierite métalloïde. See Hausmannite.
Randanite. See Opal.
RANDITE, *König.* $Ca_5U_9C_6O_{30} + 3\ H_2O$.
Rangoon tar. See Ozocerite.
Ranocchia. See Serpentine.
Raphanosmite. See Zorgite.
Raphilite. See Amphibole.
Raphilithe. See Amphibole.
Raphite. See Howlite.
Rapidolite. See Wernerite.
Rapidolithe. See Wernerite.
Raseneisenerz. See Limonite, Limnite and Xanthosiderite.
Raseneisenstein. See Limonite, Limnite and Xanthosiderite.
Rastolyte. See Voigtite.
Ratholite. See Pectolite.
Ratoffkit. See Fluorite.
Ratoikit. See Fluorite.
Rauchquarz. See Quartz.
Rauchwacke. See Calcite.
Rauhkalk. See Dolomite.
Rauite, Paijkull. $(Ca, Na_2)_5(Al_3, Fe_3)_3Si_6 O_{23} + 6\ H_2O$. Amorphous.
Raumite. See Fahlunite.
Rauschgelb. See Realgar and Orpiment.
Rauschgelb, gelbes. See Orpiment.
Rauschgelb, rothes. See Realgar.
Rauschgelbkies. See Arsenopyrite.
Rautenspath. See Calcite and Dolomite.
Rayonnante. See Amphibole.
Rayonnante en gouttière. See Titanite.
Rayonnante vitreuse. See Epidote.
RAZOUMOFFSKIN, *John.* $Al_2(Si O_3)_3 + 4\frac{1}{2}$ to $6\ H_2O$. Amorphous.
REALGAR, *Wall.* As_2S_2. Monoclinic. Arsenic rouge; arsenic sulfid; arsenic sulfuré; arsenic sulfuré rouge, *H.*; arsenicum rubrum, *Wall.*; arsenicum Sandaraca; arsenicum sulphure mixtum, *Wall.*; hemi-prismatic sulphur, *Mohs*; operment, *Germ.*; rauschgelb pt., *Wall.*; realgar natif, *de Lisle*; red orpiment, *Jameson*; red sulphuret of arsenic; reuschgeel, *Agric.*; risigallo; risigallum, *Alchem.*; rosgeel, *Agric.*; roth arsenblende; rothes rauschgelb, *Wern.*; rubine d'arsenic, *de Lisle*; ruby sulphur, *Jameson*; σανδαράκη, *Theophr.*; σανδαράχη, *Diosc.*; sandaraca, *Germ.*; sandarach; sandaracha, *Plin.*; soufre rouge de volcan; sulphuret of arsenic, *Phillips.*
Realgar jaune. See Orpiment.
Realgar natif. See Realgar.
Red antimonical ore. See Kermesite.
Red antimony. See Kermesite.
Red antimony ore. See Kermesite.
Red bole. See Halloysite.
Red cerussite. See Cerussite.
Red chalk. See Hematite.
Red clay iron stone. See Hema
Red cobalt ochre. See Eryt

copper. See Cuprite.
copper ore. See Cuprite.
glassy copper ore. See Cuprite.
hematite. See Hematite.
iron chalk. See Hematite.
iron froth. See Hematite.
iron ochre. See Hematite.
iron ore. See Hematite.
iron stone. See Hematite.
iron vitriol. See Botryogen.
lead ore. See Crocoite.
lead spar. See Crocoite.
manganese. See Rhodochrosite and Rhodonite.
manganese ore. See Rhodochrosite.
ochre. See Hematite and Turgite.
ore of manganese. See Rhodochrosite.
orpiment. See Realgar.
oxide of copper. See Cuprite.
oxide of iron. See Hematite.
oxide of titanium. See Rutile.
oxide of zinc. See Zincite.
rain. See Red snow of Idria.
scaly iron ore. See Hematite.
schorl. See Rutile.
silver. See Proustite and Pyrargyrite.
silver ore. See Proustite and Pyrargyrite.
snow of Idria. CaO, Al_2O_3, SiO_2. Earthy rain; red rain.
stilbite. See Hypostilbite.
sulphuret of arsenic. See Realgar.
vitriol. See Bieberite.
zeolite of Ædelfors. See Laumonite.
zinc ore. See Zincite.

DINGITE, *Brush* and *Dana*. Mn_3 $O_8+3\,H_2O$. Orthorhombic.

lle. See Hematite.
idite, Shepard. Hydrous phosphate f alumina and iron.
uthite. See Chalcocite.
nnskite. See Serpentine.
le, Lacava. $C_{29}H_{25}O_3$.
hardtite. See Epsomite.
hite. See Calcite.
See Water.
e talkerde. See Magnesite.
e thonerde. See Aluminite.

NITE, *von Fritsch*. $FeWO_4$. Tetragonal.

sacherite. See Wad.
sbley. See Graphite.

Reisite, von Fritsch. Contains SiO_2, Al_2O_3, CaO, Na_2O, K_2O. Monoclinic.

REMINGTONITE, *J. C. Booth.* $CoCO_3+nH_2O$. Cobalt carbonate.

Remolinite. See Atacamite.

Reniform arseniate of lead. See Mimetite.

Reniform brown clay iron ore. See Limonite.

Reniform iron ore. See Limonite.

Rensselærite. See Talc.

RESANITE, *Cleve.* $(Cu, Fe)_2Si_3O_8+9\,H_2O$. Amorphous.

Resin of retin asphalt. See Retinellite.

Resin opal. See Opal.

Résinalite. See Serpentine.

Résine de Bucaramanga. See Bucaramangite.

Resiniferous shale. See Tasmanite.

Résinite. See Retinellite.

Resinite termogino. See Opal.

Restormelite. See Kaolinite.

Retinalite. See Serpentine.

Retinalith. See Serpentine.

Retinallophane. See Pittieite.

Retinasphalt. See Retinellite.

Retinasphaltum. See Retinellite.

Retinbaryte. See Triplite.

RETINELLITE, *Dana.* $C_{21}H_{28}O_3$. Bernerde; bitumen from Bovey, *Hatchett*; Bovey coal pt.; bright yellow loam saturated with petroleum pt., *Milles*; résinite, *H.*; resin of retin asphalt, *Johnston*; retinasphalt, *Thompson*; retinasphaltum, *Hatchett*; retinic acid, *Johnston*; retinite pt., *Haid.*; rétinite de Halle, *Bucholz.*

Retinic acid. See Retinellite.

Retinite. See Copalite, Orthoclase, Pianzite, and Retinellite.

Rétinite de Halle. See Retinellite.

Rétinite du Cantal. See Orthoclase.

Rétinite perlé. See Orthoclase.

Retinit von Walchow. See Walchowite.

RETZBANYITE. $4PbS.5Bi_2S_3$.

Retzite. See Laumontite.

Reuschgeel. See Realgar.

Reussin. See Mirabilite.

REUSSINITE, *Dana.* $C_{40}H_{56}O_3$.

Rhabdite, Rose. Fe, P, As, S. Meteoric.

RHABDOPHANE, *Lettsom.* $(Y, Er)_2$ $(La, Di)_8(PO_4)_{10}+5H_2O$. Rabdophane; scovillite, *Brush*; skovillite.

Rhætizite. See Cyanite.

Rhätizit. See Cyanite.

RHAGITE, *Weisbach.* $Bi_{10}As_4O_{25}+8H_2O$. Isometric (?).

Rheinkiesel. See Quartz.

Rhodalite, Thomson. Near Smectite.

Rhodalose. See Bieberite.

Rhodhalite. See Bieberite.

Rhodicit. See Rhodizite.

Rhodite. See Gold.

Rhodium gold. See Gold.

RHODIZITE, *G. Rose.* $Ca_7Cl_2B_{16}O_{30}$ (?). Isometric. Rhodicit, *Haus.*

Rhodochrolite. See Rhodochrosite.

Rhodochrome. See Penninite.

RHODOCHROSITE, *Haus.* $MnCO_3$. Hexagonal. Blättrige rothmanganerz, *Jasche*; braunsteinerz; carbonate of manganese, *Phillips*; diallogite, *Beud.*; dialogite, *Jasche*; dichter rothstein, *Haus.*; himbeerspath, *Breit.*; kobaltmanganspath; kohlensaures magnesium oxydul, *Haus.*; luftsaures braunsteinerz, *Lenz*; macrotypous parachrose-baryte, *Mohs*; magnesium acido aëreo mineralisatum, *Bergm.*; magnesium ochraceum rubrum; manganèse carbonaté, *H.*; manganèse lithoïde rouge, *Brong.*; manganèse oxydé carbonaté, *H.*; manganèse oxidé rose silicifère amorphe; manganèse rouge, *Broch.*; manganese spar, *Jameson*; mangankohlensaures; manganosiderite; manganspath, *Wern.*; oxide de manganèse couleur de rose pt.; red manganese ore, *Haus.*; red ore of manganese, *Kirw.*; rhodochrolite; rhomboidal red manganese, *James.*; rosenspath, *Breit.*; rothbraunerz, *Haid.*; rothbraunstein; rothbraunsteinerz; rother braunstein; rother braunsteinerz; rothmanganerz; rothspath; stromit.

Rhodoial. See Erythrite.

Rhodoïse. See Erythrite.

RHODONITE, *Jasche.* (Mn, Ca, Fe)SiO_3. Triclinic. Anhydrous silicate of manganese; bisilicate of manganese; braunstein-kiesel; braunstein, rother; carbon silicate; carbo silicate de manganèse; dichtes roth braunsteinerz, *Karst.*; hydropit, *Germar*; kapnikit, *Huot*; Kapnikker feldspath, *Karst.*; kieselmangan; manganèse lithoïde, *Brong.*; manganèse rose; manganèse rouge; manganèse silicate rose, *Dufr.*; manganèse silicate, *H.*; manganese spar pt.; mangankiesel; paisbergite *Igels.*; red manganese, *Allan*; roth braunstein pt., *Wern.*; roth braunsteinerz pt., *Wern.*; rother braunstein, *Ruprecht*; rother braunsteinerz; rothstein, *Haus.*; silicate of magnesia; silicate of manganese, *Allan*; siliciferous oxide of manganese, *Phil.*; white manganese, *Aikin.*

ALLAGITE, *Jasche*: Rhodonite and Hornstone. Diaphorite; green silicate of manganese; grünmangan; grünmanganerz, *Jasche.*

BUSTAMITE, *Brong.*: $Mn_3Ca(SiO_3)_4$. Bisilicate de manganèse et de chaux, *Brong.*; buchstamite.

FOWLERITE, *Shep.*: (Mn, Fe, Ca, Mg, Zn)SiO_3. Ferrosilicate of manganese, *Thom.*; keatingine, *Shep.*; siliceous oxide of manganese, *Fowler.*

ALTERED RHODONITES.

CUMMINGTONITE, *Ramm.*: Hermannite, *Kenng.*; mangan amphibol, *Herm.*

DYSSNITE, *von Kobell*: Sesquisilicate of manganese, *Thom.*

HORNMANGAN, *Jasche*: Corneous manganese.

MARCELINE, *Berth.*: Heteroclin, *Erdmann-off*; heteroklin.

PESILLITE, *Huot.*

PHOTICITE, *Germar*. Photizit, *Brandes*; tomosite, *Dufr.*

Rhodophyllite. See Penninite.

Rhombarsenite. See Claudetite.

Rhombenglimmer. See Biotite and Phlogopite.

Rhombic mica. See Phlogopite.

Rhombischer vanadit. See Dechenite.

Rhombites pacites. See Pacite.

Rhombohedral alum haloid. See Alunite.

Rhombohedral antimony. See Antimony.

Rhombohedral arseniate of copper. See Chalcophyllite.

Rhombohedral arsenic. See Arsenic.

Rhombohedral baryte. See Witherite.

Rhombohedral calamine. See Smithsonite.

Rhombohedral cerium ore. See

Rhombohedral corundum. See Corundum.
Rhombohedral emerald. See Beryl.
Rhombohedral emerald malachite. See Dioptase.
Rhombohedral euchlore malachite. See Chalcophyllite.
Rhombohedral euchlore mica. See Chalcophyllite.
Rhombohedral eutome glance. See Tetradymite.
Rhombohedral feldspar. See Nephelite.
Rhombohedral fluor haloid. See Apatite.
Rhombohedral graphite. See Graphite.
Rhombohedral graphite mica. See Graphite.
Rhombohedral iridium. See Iridosmine.
Rhombohedral iron ore. See Hematite.
Rhombohedral iron pyrites. See Pyrrhotite.
Rhombohedral kouphone mica. See Brucite.
Rhombohedral kouphone spar. See Chabazite.
Rhombohedral lead baryte. See Mimetite and Pyromorphite.
Rhombohedral lime haloid. See Dolomite.
Rhombohedral melan mica. See Cronstedtite.
Rhombohedral molybdena glance. See Molybdenite.
Rhombohedral pearl mica. See Seybertite.
Rhombohedral quartz. See Quartz.
Rhombohedral ruby blende. See Pyrargyrite.
Rhombohedral talc mica. See Prochlorite.
Rhombohedral tourmaline. See Tourmaline.
Rhombohedral zeolite. See Chabazite.
Rhombohedral zinc baryte. See Smithsonite.
Rhomboidal feldspar. See Nephelite.
Rhomboidal pearl mica. See Margarite.
Rhomboidal red manganese. See Rhodochrosite.
Rhomboidal silver glance. See Stephanite.
Rhomboidal-spath. See Dolomite.
Rhomboïdal-tellur. See Sylvanite.
Rhomboidal vitriol. See Melanterite.
Rhomb spar. See Dolomite.
Rhyacolite. See Orthoclase.
Rhyakolith. See Orthoclase.
Ribbon agate. See Quartz.
Ribbon jasper. See Quartz.
RICHELLITE, *Cesaro.* $4\,Fe_2(PO_4)_2 . Fe_4OF_2(OH)_2 + 36\,H_2O$.
Richmondite. See Gibbsite.
Richterite. See Amphibole and Pyroxene.
Riemanite. See Allophane.
Riemannite. See Allophane.
RINKITE. $2\,(Ce, La)(Si, Ti)O_3 . NaF$. Monoclinic.
Riolite. See Tetrahedrite.
Rionite. See Tetrahedrite.
Ripidolite. See Prochlorite.
RIPIDOLITE, *Rammelsberg.* $H_8(Mg, Fe)_5(Al, Fe, Cr)_2Si_3O_{18}$. Monoclinic. Blue talc of Taberg, *Wern.*; chlorite pt., *Early authors*; chlorite earth; chinochlore, *Blake*; grastite; hexagonal chlorite pt.; hexagonal talc; klinochlor, *Germ.*; mica pt., *Wall.*; mica chlorite, *Adam*; peach, *Cornish miners*; prismatic talc mica, *Mohs*; ripidolith, *von Kob.*; serpentine d'aker; tabergit pt., *Rose*; talc chlorite of Traversella; talc mica pt., *Mohs*; talgsten pt., *Cronst.*; telgsten pt., *Wall.*
KOTSCHUBEIT, *Koks.* Kotschubeyit.
Ripidolithe. See Ripidolite.
Risigallo. See Orpiment and Realgar.
Risigallum. See Orpiment and Realgar.
Risseite. See Aurichalcite.
RITTINGERITE, *Zippe.* $5\,Ag_2Se . Ag_2Se_3$. Monoclinic.
Rivotite, Duclour. Sb_2O_5. $4\,(Cu, Ag)CO_3$. Amorphous.
Rocherz melanglanz. See Stephanite.
Rochlandite. See Serpentine.
ROCHLEDERITE, *Dana.* $C_{40}H_{56}O_6$. Amorphous. Melanchym, *Haid.*; substanz bituminose pt., *Rochleder.*
Rock butter. See Chrismatite and Halotrichite.
Rock cork. See Amphibole.
Rock crystal. See Quartz.
Rock leather. See Amphibole and Xylotile.
Rock marrow. See Halloysite and Kaolinite.
Rock meal. See Calcite and Opal.

Rock milk. See Calcite.
Rock oil. See Naphtha.
Rock salt. See Halite.
Rock soap. See Halloysite and Saponite.
Rock wood. See Amphibole and Xylotile.
Röd magnesia. See Piedmontite.
Röd spitsglasmalm. See Kermesite.
ROEMERITE, *Grailich.* $(Fe, Zn)SO_4 \cdot Fe_2(SO_4)_3 + 12\ H_2O$. Monoclinic. Roesmerite.
ROEPPERITE, *Brush.* (Zn, Fe, Mn, $Mg)_2SiO_3$. Orthorhombic.
Röschgewächs. See Stephanite.
Roesmerite. See Roemerite.
ROESSLERITE, *Blum.* $H_2Mg_2As_2O_8 + 12\ H_2O$. Crystalline.
Roestone. See Calcite.
Roethel. See Hematite.
Röttisite. See Genthite.
Rogenstein. See Calcite.
Rogersite, J. L. Smith. Decomposition product of Samarskite. Massive.
Rohwand. See Ankerite and Dolomite.
Rolled gold. See Gold.
Roman-red jasper. See Quartz.
Romanzovite. See Garnet.
Romanzowite. See Garnet.
Romeine. See Romeite.
ROMEITE, *Dana.* $Ca_2Sb_2O_8$. Tetragonal. Antimonite de chaux; antimonite of lime romeine, *Damour.*
Romersk alunsten. See Alunite.
ROSCOELITE, *Blake.* $K_2(Mg, Fe)(Al_2, V_2)_2Si_{12}O_{32} + 4\ H_2O$. Crystalline. Roscoelith.
Roscoelith. See Roscoelite.
Rose garnet. See Garnet.
Rose iron. See Menaccanite.
Rose iron glance. See Hematite.
Rose opal. See Opal.
Rose quartz. See Quartz.
Rose spinel. See Spinel.
Rose-red spinel. See Spinel.
ROSELITE, *Levy.* $(Ca, Co, Mg)_2(AsO_4)_2 + 2\ H_2O$. Triclinic. Roselith.
Roselith. See Roselite.
Rosellan. See Pinite.
Rosenbuschite, Brögger. ZrO_2, SiO_2, etc. Monoclinic.
Rosenite. See Chalcostibite.
Rosenquarz. See Quartz.
Rosenspath. See Rhodochrosite.
Rosgeel. See Realgar.
Rosine. See Pinite.
Rosin tin. See Cassiterite.
Rosite. See Chalcostibite and Pinite.
Rosso antico. See Calcite.
Rosstrevorite. See Epidote.
Rosszahn. See Ankerite.
Rosterite. See Beryl.
ROSTHORNITE, *Höfer.* $C_{24}H_4O$.
Rosy red quartz. See Quartz.
Rothbleierz. See Crocoite.
Rothbraunstein. See Rhodochrosite and Rhodonite.
Rothbraunsteinerz. See Rhodochrosite and Rhodonite.
Rotheisenerz. See Hematite.
Rotheisenrahm. See Hematite.
Rotheisenstein. See Hematite.
Rother braunstein. See Rhodochrosite and Rhodonite.
Rother braunsteinerz. See Rhodochrosite and Rhodonite.
Rother eisenrahm. See Hematite.
Rother eisenstein. See Hematite.
Rother eisenvitriol. See Botryogen.
Rother erdkobald. See Erythrite.
Rother glaskopf. See Hematite.
Rother schorl. See Rutile and Tourmaline.
Rother vitriol. See Bieberite.
Rothes bleyerz. See Crocoite.
Rothes rauschgelb. See Realgar.
Rothgiltigerz. See Proustite and Pyrargyrite.
Rothgiltigerz, dunkles. See Pyrargyrite.
Rothgiltigerz, lichtes. See Proustite and Pyrargyrite.
Rothgolderz. See Pyrargyrite.
Rothgültigerz. See Proustite and Pyrargyrite.
Rothgulden. See Pyrargyrite.
Rothgylden. See Pyrargyrite.
Rothkupfererz. See Cuprite.
Rothmanganerz. See Rhodochrosite.
Rothnickelkies. See Nicollite.
Rothoffit. See Garnet.
Rothspath. See Rhodochrosite.
Rothspiessglaserz. See Kermesite.
Rothspiessglanzerz. See Kermesite.
Rothstein. See Rhodonite.
Rothzinkerz. See Zincite.
Rotten-stone.
Roubschite. See Magnesite.
Rubace. See Quartz.
Rubasse. See Quartz

Rubellan. See Biotite.
Rubellite. See Tourmaline.
Ruberite. See Cuprite.
Rubicelle. See Spinel.
Rubicelle, Balas. See Spinel.
Rubidium orthoclase.
Rubie-étoile. See Corundum.
Rubin. See Corundum.
Rubinblende. See Proustite and Pyrargyrite.
Rubine d'arsenic. See Realgar.
Rubinförmiger eisenglimmer. See Göthite.
Rubinglimmer. See Göthite.
Rubino di rocca. See Garnet.
Rubin orientales octaedrice. See Spinel.
Rubinrother eisenglimmer. See Göthite.
Rubinus. See Spinel.
Rubis. See Corundum.
Rubis Balais. See Spinel.
Rubis de Bohême. See Quartz.
Rubis oriental. See Corundum.
Rubis spinelle. See Spinel.
Rubislite, Heddle. Chloritic.
Rubrica. See Sinopite.
Ruby. See Corundum.
Ruby, almandine. See Spinel.
Ruby, Balas. See Spinel.
Ruby blende. See Proustite and Pyrargyrite.
Ruby, Bohemian. See Quartz.
Ruby, Brazilian. See Topaz.
Ruby mica. See Göthite.
Ruby, oriental. See Corundum.
Ruby silver. See Proustite and Pyrargyrite.
Ruby spinel. See Spinel.
Ruby sulphur. See Realgar.
Ruddle. See Hematite.
Ruin agate. See Quartz.
Ruin marble. See Calcite.
Russkohle. See Mineral coal.
Russkobalt. See Wad.
Rutenit. S, Co, Ni, As.
Ruthenium sulphuret. See Laurite.
RUTHERFORDITE, *Shepard.* CaO TiO_3, etc. Monoclinic.
RUTILE, *Werner.* TiO_2. Tetragonal. Acide titanique; crispite, *Dela.*; flèches d'amour; hair stone; oxide of titanium; oxide rouge de titanium, *Dela.*; peritomous titanium ore, *Mohs*; rèd oxide of titanium; red schorl, *Kirw.*; rother schorl pt., *Klapr.*; sagenite, *Saus.*; schorl crystallisé opaque rouge, *von Born*; schorl pourpre de Madagascar, *de Lisle*; schorl rouge, *de Lisle*; titane oxydé, *H.*; titane oxydé rouge; titanic acid, *Thomson*; titanite, *Kirwan*; titankalk, *Klapr.*; titan schorl, *Reuss*; veneris crinis, *Plin.*; Venus hairstone.
NIGRINE, *Karst.*: Eisenhaltiges titanerz, *Klapr.*; ilmenorutile, *Koksch.*; iserit, *Janovsky*; nigrene; schwarzer granat, *Lampadius*; titane ferrifère.
TITANE OXIDÉ CHROMIFÈRE.
Rutilite. See Titanite.
Ryacolite. See Orthoclase.
Ryakolith. See Orthoclase.
Sable vert cuivreux du Pérou. See Atacamite.
Saccharite. See Andesite.
Sachsischer beryll. See Apatite.
Sätersbergite. See Löllingite.
Safflorite. See Smaltite.
Sagenite. See Rutile.
Sahla-pseudomorph. MgO, SiO_2, H_2O.
Sahlite. See Pyroxene.
Salaite. See Pyroxene.
Salamander's hair. See Amphibole.
SAL AMMONIAC, *Kirwan.* NH_4Cl. Isometric. Alcali volatil muriatique, *de Lisle*; ammonia muriate; ammoniac salt; ammoniak salz; ammoniak salz, octaedrisches; ammoniaque muriatée, *H.*; chloramuonium; chloride of ammonium; muriate of ammonia, *Phillips*; natürliches salmiak, *Model*; nitrum, *Ancients*; octahedral ammoniac salt, *Mohs*; salmiac, *Beud.*; salmiak, *Germ.*; sel ammoniac, *de Lisle*; sel ammoniaque, *Brochant*; sel de Tartarie; sel volatil.
Sal ammoniac vitriolique. See Mascagnite.
Sal Anglicanum. See Epsomite.
Sal Anglicus. See Epsomite.
Sal de los Alpes. See Epsomite.
Sal digestivus sylvii. See Sylvite.
Sal gem. See Halite.
Sal gemmæ. See Halite.
Sal mirabile. See Mirabilite.
Sal nativum catharticum. See Epsomite.
Sal neutrum acidulaire. See Epsomite and Halite.

Sal polychrestum Glaseri. See Aphthitalite.
Sal sedativo naturale. See Sassolite.
Sal sedativum. See Sassolite.
Salamstein. See Corundum.
Salamstone. See Corundum.
Saline efflorescence of Atacama. Na_2O, SO_3.
Salit. See Pyroxene.
Salmare. See Halite.
Salmiac. See Sal ammoniac.
Salmiak. See Sal ammoniac.
Salmite, von Dumont. $H_2(Fe, Mn)Al_2SiO_7$.
Salpeter. See Nitre.
Salpetre terreux. See Nitrocalcite.
Salt. See Halite.
Salt clay, Humboldt. $Al_4Si_9O_{24}$. $2MgCO_3$. Saltzthon.
Salt, gray. See Halite.
Salt, green. See Halite.
Salt of phosphorus. See Stercorite.
Salt, red. See Halite.
Salt, white. See Halite.
Saltsyradt bly. See Mendipite.
Saltpeter. See Nitre.
Salz. See Halite.
Salzkupfererz. See Atacamite.
Salzsäure. See Hydrochloric acid.
Salzsaurer kalk. See Anhydrite.
Salzsaures bleierz. See Phosgenite.
Salzsaures blei von Mendip. See Mendipite.
Salzsaures eisenoxyd. See Pyrosmalite.
Salzsaures gas. See Hydrochloric acid.
Salzsaures kupfer. See Atacamite.
Salzsaures quecksilberoxydul. See Calomel.
Salzthon. See Salt clay.
SAMARSKITE, *H. Rose.* 9 (Fe, Y, Ce, Er)$_4U_5Nb_6O_{42}$. Orthorhombic. Eytlandite, *Wage*; uranoniobit, *H. Rose*; uranotantal, *H. Rose*; vietinghofite, *von Lomonosoff*; yttroilmenit, *Herm.*
Samian earth. See Kaolinite.
Sammetblende. See Göthite.
Sammeterz. See Cyanotrichite.
Sammteisenerz. See Göthite.
SAMOITE, *Dana.* $Al_4(SiO_4)_3+10H_2O$.
Sandaraca. See Realgar.
Sandaracha. See Realgar.
Sandastros. See Quartz.
Sandbergerite. See Tennantite.
Sandkohle. See Mineral coal.
Sandstein. See Quartz.
Sandstein, crystallisirter. See Calcite.
Sandstone. See Quartz.
Sandstone, flexible. See Quartz.
Sandstone ore. See Limonite.
Sand, volcanic. See Pozzuolana.
Sanguine. See Hematite.
Sanidin. See Orthoclase.
Santilite. See Opal.
Santorine. Al_2O_3, Fe_2O_3, SiO_2.
Saphir. See Corundum.
Saphir astérié. See Corundum.
Saphir blanc. See Corundum.
Saphir d'eau. See Iolite.
Saphir de chat. See Corundum.
Saphir de France. See Quartz.
Saphir de Puy-en-Velay. See Quartz.
Saphir du Brésil. See Tourmaline.
Saphir étoilé. See Corundum.
Saphir femelle. See Corundum.
Saphir indigo. See Corundum.
Saphir mâle. See Corundum.
Saphir occidental. See Iolite.
Saphir oriental. See Corundum.
Saphir plombé. See Corundum.
Saphirine. See Quartz and Sapphirine.
Saponite. See Montmorillonite.
SAPONITE, *Svanberg.* MgO 24 to 33 per cent., Al_2O_3 6 to 9 per cent., SiO_2 42 to 51 per cent., H_2O 11 to 19 per cent. Amorphous. Bergseife; breanzonet krita, *Engelsk*; bowlingite; hydrous steatite; pierre à savon, *H.*; piotine, *Svan.*; rock soap, *James.*; seifenstein, *Klapr.*; smectus, *Cronst.*; soapstone pt., *Nicol*; steatite of Cornwall, *Kirw.*; terra porcellana particulis impalpabilibus mollis pt., *Engelsk*; thalite, *Owen*; wachstein; walklera, *Cronst.*
Sappare. See Cyanite.
Sapparite. See Cyanite.
Sapphire. See Corundum.
Sapphire, asteriated. See Corundum.
Sapphire, blue. See Corundum.
Sapphire, chatoyant. See Corundum.
Sapphire, false. See Quartz.
Sapphire, green. See Corundum.
Sapphire, limpid. See Corundum.
Sapphire, occidental. See Quartz.
Sapphire, oriental. See Corundum.
Sapphire, perfect. See Corundum.
Sapphire quartz. See Quartz.
Sapphire, red. See Corundum.
Sapphire, violet. See
Sapphire, yellow
Sapphirine.

SAPPHIRINE, *Haus.* $(Mg, Fe)_5Al_{10}Si_3O_{23}$. Monoclinic. Saphirine, *Phillips*; sapphirin from Greenland, *Giesecke*; siderite.

Sapphirin from Greenland. See Sapphirine.

Sapphirus. See Corundum and Lapis lazuli.

Sappira. See Corundum.

Sappiros. See Lapis lazuli.

Sarancolin marble. See Calcite.

Sarawakite. See Senarmontite.

Sarcolite. See Gmelinite.

SARCOLITE, *Thompson.* $Na_2Ca_8Al_6(SiO_4)_9$. Tetragonal. Analcime carnea, *Mont.* and *Cov.*; octahedral kouphone spar, *Haid.*; sarcolithe, *H.*; sarkolith.

Sarcolithe. See Gmelinite and Sarcolite.

SARCOPSIDE, *Websky.* 4 (Fe, Mn, Ca)$_3P_2O_8$.RF_2.$R_2(OH)_6$. Monoclinic.

Sard. See Quartz.

Sarda. See Quartz.

Sardachates. See Quartz.

Sardinian. See Anglesite.

Sardoine. See Quartz.

Sardoine panachée. See Quartz.

Sardonyx. See Quartz.

Sarkinite. See Polyarsenite.

Sarkolith. See Sarcolite.

SARTORITE, *Dana.* PbS. As_2S_3. Orthorhombic. Arsenomelan, *Petersen*; binnit, *C. Heusser*; bleiarsenglanz; dufrenoysite, *Damour*; scleroclase; skleroklas, *vom Rath*; skleroklas arsenomelan, *von Waltershausen.*

Saspachite. See Stilbite.

Saspachite, Des Cloizeaux. A zeolite from Saspach.

Sassolin. See Sassolite.

SASSOLITE, *Dana.* H_3BO_3. Triclinic. Acide boracique, *Fr.*; acide borique, *H.*; acidum boracis, *Bergm.*; boracic acid, *Phillips*; boraxsäure, *Leonh.*; bore; boric acid; borsäure; native boracic acid, *Kirw.*; native borax; native sedative salt; natürliches sedative salz, *Mohs*; prismatic boracic acid, *Mohs*; sal sedativo naturale, *Hoefer*; sal sedativum, *Bergm.*; sassolin, *Jameson*; saszolin, *Mohs*; sel sédatif, *Homberg.*

Saszolin. See Sassolite.

Satin spar. See Aragonite, Calcite and Gypsum.

Saturn. See Lead.

Saualpit. See Zoisite.

Saugkalk. See Calcite.

Saugkiesel. See Opal.

Saulen schwerspath. See Barite.

Saulpitite. See Zoisite.

Saussurite. See Wernerite and Zoisite.

Saustein. See Calcite.

Savite. See Natrolite.

Savodinskite. See Hessite.

Savon de montagne. See Halloysite.

Savon de verrières. See Pyrolusite.

Saxon topaz. See Topaz.

Saxum calcis. See Calcite.

Saynite. See Grünauite.

Scacchite, Adam. A supposed chloride of manganese. Chloride of manganese; manganese chloride.

Scale gold. See Gold.

Scale-stone. See Lepidolite.

Scaly blende. See Sphalerite.

Scaly brown iron ore. See Limonite.

Scaly red iron ore. See Hematite.

Scaly talc. See Kaolinite.

Scaly triclasite. See Fahlunite.

Scapolite. See Anorthite, Cerite, Ekebergite, Paranthite, and Wernerite.

Scapolite talciforme. See Micarelle.

Scarbroite, Vernon. Near Schrötterite.

Schaalenblende. See Sphalerite.

Schaalenkalk. See Aragonite.

Schaalstein. See Wollastonite.

Schabasit. See Chabazite.

Schätzellit. See Sylvite.

Schapbachite, Kenngott. 12 (Ag_2, Pb, RS.) Bi_2S_3 (?). Argent bismuthifère; argent bismuthique; bismuthic silver; bismuthisches silber, *Selb*; bismuth silver of Schapback, *Dana*; bismuth sulfuré plumbo argentifère; silber wismuthglanz: silberwismutherz, *Haus.*; wismuthbleierz; wisuthsilber; wismuthsilbererz, *Selb.*

Schaum earth. See Calcite.

Schaumartiger wad-graphit. See Wad.

Schaumerde. See Calcite.

Schaumgyps. See Gypsum.

Schaumkalk. See Aragonite and Calcite.

Schaumspath. See Calcite.

Scheele ore. See Wolframite.

Scheelate of iron and manganese. See Wolframite.

Scheelbleierz. See Stolzite.

Scheelbleispath. See Stolzite.

Scheelerz. See Scheelite.
Scheelin calcaire. See Scheelite.
Scheelin ferruginé. See Wolframite.
Scheelin ferrugineux. See Wolframite.
SCHEELITE, *Leonhard.* $CaWO_4$. Tetragonal. Calcareous oxide of tungsten; calcareous tungsten; chaux tungstatée; lapides staniferi spathacei *Wall.* lik en huit spat, *Wall.* pierre pesant, *Broch.*; pyramidal scheelium baryte, *Mohs* pyramidal tungsten, *James.* scheelerz, *Karst.*; scheelin calcaire, *H.* scheelium baryt, *Mohs*; scheelspath, *Breit.*; schwerstein *Wern.* stannum spathosum subdiaphanum album, *Linn.*; tennspat, *Wall.* tungstate of lime, *Phil.*; tungstein, *Scheele*; tungstein blanc; tungsten, *Phil.*; tungstic acid and lime, *Scheele.*
Scheelite, cupreous. See Cuproscheelite.
Scheelitine. See Stolzite.
Scheelium baryt. See Scheelite.
Scheelium ore. See Wolframite.
Scheelsäure. See Tungstite.
Scheelsaures blei. See Stolzite.
Scheelspath. See Scheelite.
SCHEERERITE, *Stromeyer.* CH_4. Monoclinic. Naphthaline naphthaline résineuse prismatique, *Könlein*; suif de montagne xylokryptit.
Schefferite. See Pyroxene.
Schefferite, Breit. Near Amphibole. Monoclinic.
Scheiferkohle. See Mineral coal.
Scherbenkobalt. See Arsenic.
Schieferspar. See Calcite.
Schieferspath. See Calcite.
Schilfglaserz. See Freieslebenite.
Schillernder asbest. See Serpentine.
Schillerquarz. See Quartz.
Schiller-spar. See Bastite and Enstatite.
Schillerspath. See Bastite and Enstatite.
Schillerspath, gelber. See Diaclasite.
Schillerstein. See Bastite and Enstatite.
Schiller-stone. See Bastite and Enstatite.
Schirl. Equals Schorl.
SCHIRMERITE, *Genth.* $Ag_6Pb_3Bi_4S_6$.
Schiuma di mare. See Sepiolite.
Schlacken kobalt. See Wad.
Schlackiger granat. See Garnet.
Schlaken Ca, Al, Mg, Mn, SiO_2.
SCHLANITE, *Dana.* $C_{40}H_{52}O_{3\frac{1}{2}}$. Anthracoxen pt., *Reuss.*
Schleritinite. See Scleretinite.
Schmaragd. See Beryl.
Schmelzstein. See Dipyre.
Schmirgel. See Corundum.
Schnee. See Water.
Schneebergite, Brezina. CaO, Sb_2O_5, etc. Isometric.
Schneiderite. See Laumontite.
Schoarite. See Barite.
Schön rubin rothguldenerz. See Proustite.
Schönit. See Picromerite.
Schörl. Equals Schorl.
Schorl aiguë-marine. See Epidote.
Schorl argileux. See Amphibole.
Schorl blanc. See Albite, Leucite, and Topaz.
Schorl blanc du Vésuve. See Nephelite.
Schorl blanchâtre. See Topaz.
Schorl blanchâtre de Mauléon. See Dipyre.
Schorl bleu. See Cyanite and Octahedrite.
Schorl bleu de Sibérie. See Vivianite.
Schorl bleu indigo. See Octahedrite.
Schorl cruciforme. See Staurolite.
Schorl crystallisé opaque rouge. See Rutile.
Schorl, edler. See Tourmaline.
Schorl électrique. See Tourmaline.
Schorl en gerbes. See Prehnite.
Schorl en prismes dont les angles obtus sont de 95° See Andalusite.
Schorl noir. See Pyroxene and Tourmaline.
Schorl noir en prisme à huit pans terminé par une pyramide dièdre, etc. See Pyroxene.
Schorl octaèdre. See Octahedrite.
Schorl octaèdre obliquangle tronqué. See Pyroxene.
Schorl opaque qui paroissent dériver d'un octaèdre rhomboïdal. See Pyroxene.
Schorl opaque rhomboïdal. See Amphibole and Pyroxene.
Schorl pourpre de Madagascar. See Rutile.
Schorl rouge. See Rutile.
Schorl spar. See Amphibole.
Schorl spatheux. See Spodumene.
Schorl, transparent lenticulaire. See Axinite.
Schorl, transparent rhomboïdal. See Tourmaline.

Schorl vert du Dauphiné. See Epidote.
Schorl vert du Vésuve. See Vesuvianite.
Schorl vert du Zillerthal. See Amphibole.
Schorl violet. See Axinite.
Schorlamite. See Schorlomite.
Schorlartiger beril. See Topaz.
Schorlartiger topaz. See Topaz.
Schorlite. See Topaz.
SCHORLOMITE, *Shepard.* (Ca, Fe) (Si, Ti)O_3. Massive. Ferrotitanite, *Whitney*; ivaarite; iwaarite, *Kutorga*; schorlamite.
Schorlous beryl. See Topaz.
Schorza. See Epidote.
SCHRAUFITE, *von Scröckinger.* $C_{11}H_{16}O_2$.
Schreibersite. See Shepardite.
SCHRIEBERSITE, *Haidinger.* Ni_2Fe_4P. Dyplitite, phosphide of iron and nickel.
Schrifterz. See Sylvanite.
Schrifttellur. See Sylvanite.
Schröckeringite, Schrauf. U_3O_3, CO_2, H_3O. Crystalline.
SCHRÖTTERITE, *Glocker.* $Al_{16}Si_3O_{30}$+ 30 H_2O. Amorphous. Opal allophane; opaline allophane, *Schrötter.*
Schuchardite. See Pimelite.
Schützit. See Celestite.
Schulzit. See Geocronite.
Schungite, von Inostranzeff. Amorphous carbon of Schunga.
Schuppenstein. See Lepidolite.
Schuppiger thon. See Kaolinite.
Schuppig-fasriger brauneisenstein. See Göthite.
Schurl. Equals Schorl.
Schvartsertz. See Stephanite.
Schwaden. See Carbonic acid.
SCHWARTZEMBERGITE. *Dana.* $Pb_3(I, Cl)_3O_2$. Isometric. Plumbiodite, *Adam*; jodblei; lead oxychlorid; oxychloroïodure de plomb, *Domeyko.*
Schwarzbeckerz. See Uraninite.
Schwarzbleierz. See Cerussite.
Schwarzbraunstein. See Hausmannite, Psilomelane, and Wad.
Schwarzbraunsteinerz. See Hausmannite, Psilomelane, and Wad.
Schwarzbraunsteinerz von Klapperud. See Klipsteinite.
Schwarze blende. See Alabandite and Sphalerite.
Schwarzeisenstein. See Psilomelane.
Schwarzer erdkobald. See Wad.
Schwarzer glaskopf. See Psilomelane.
Schwarzer granat. See Rutile.
Schwarzer mangan-kiesel. See Klipsteinite.
Schwarzer schörl. See Tourmaline.
Schwarzer zeolith. See Gadolinite.
Schwarzerz. See Alabandite, Tetrahedrite, and Stephanite.
Schwarzgiltigerz. See Stephanite and Tetrahedrite.
Schwarzkohle. See Mineral coal.
Schwarzmanganerz. See Hausmannite.
Schwarzspiessglanzerz. See Bournonite.
Schwarzspiessglaserz. See Bournonite.
Schwatzite. See Tetrahedrite.
Schwefel. See Sulphur.
Schwefel, natürlicher. See Sulphur.
Schwefelantimonblei. See Boulangerite.
Schwefeleisen, meteorisches. See Troilite.
Schwefelichte-säure. See Sulphatite.
Schwefelige-säure. See Sulphatite.
Schwefeliges-hydrogengas. See Sulphuretted hydrogen.
Schwefelkies. See Millerite and Pyrite.
Schwefelkohle. See Mineral coal.
Schwefelkobalt. See Jaipurite and Linnæite.
Schwefelleberluft. See Sulphuretted hydrogen.
Schwefelmangan. See Alabandite.
Schwefelnickel. See Millerite.
Schwefelquecksilber. See Cinnabar.
Schwefelsäure. See Sulphatite.
Schwefelsäure, unvollkommene. See Sulphatite.
Schwefelsaurer-kalk, wasserfreier. See Anhydrite.
Schwefelsaurer-kalk, wasserhaltiger. See Gypsum.
Schwefelsaurer-strontian. See Celestite.
Schwefelsaures baryte. See Barite.
Schwefelsaures-blei-und-kupfer. See Linarite.
Schwefelsaures-natron. See Mirabilite.
Schwefelsaures-strontianit aus Pennsylvanien. See Celestite.
Schwefelselenzinkquecksilber. See Metacinnabarite.

Schwefelsilber. See Argentite and Acanthite.

Schwefelsilber-und-antimon. See Freieslebenite.

Schwefel-und-kohlensaures blei. See Lanarkite.

Schwefel-und-kohlensaures blei-und kupfer. See Caledonite.

Schwefelwasserstoffgas. See Sulphuretted hydrogen.

Schwefeltes wasserstoffgas. See Sulphuretted hydrogen.

Schweizerische jade. See Zoisite.

Schwerbleierz. See Plattnerite.

Schwere-brennbare-luft. See Marsh gas.

Schwerspath. See Barite.

Schwerspath, fasriger. See Celestite.

Schwerstein. See Scheelite.

Schweruran. See Uraninite.

Schweruranerz. See Uraninite.

Schwimmkiesel. See Opal.

Schwimmstein. See Opal and Quartz.

SCLERETINITE, *Mallet.* $C_{40}H_{56}O_4$. Schleritinite, *Watts*; skleretinite; skleritinite.

Scleroclase. See Dufrenoysite and Sartorite.

SCOLECITE, *Dana.* $CaAl_2Si_3O_{10}+3H_2O$. Monoclinic. Acicular stone, *Jameson*; calcareous mesotype; fibrous zeolite pt.; haarcialite pt.; harzeolith; harzialite; kalkmesotyp; lime-mesotype; mesotype pt.; needle zeolite, *Jameson*; poonahlite, *Brooke*; poonahlith; scolezite; skolecit; skolezit, *Gehlen* and *Fuchs*; sternstein; weissian.

Scolecite, anhydrous. See Ersbyite.

Scolerite. See Scorilite.

Scolexerose. See Ersbyite.

Scolezite. See Scolecite.

Scolirite. See Scorilite.

Scolopsite. See Haüynite.

Scorilite, Thomson. Near Tachylyte. Scolerite, *Dufr.*; scolirite, *Thom.*; scoritite; skolirite.

Scoritite. See Scorilite.

SCORODITE, *Beudant.* $Fe_2As_2O_8+4H_2O$. Orthorhombic. Arseniate of copper, *Phillips*; arseniksinter, *Herm.*; arsensinter; cuivre arséniaté ferrifère, *H.*; cupreous arseniate of iron, *Bourn.*; cupro-martial arsenate, *Bourn.*; eisensinter, *Herm.*; fer arséniaté cuprifère; iron cupreous arsenate; iron sinter, *Allan*; jogueite; jogynaite; kobalt-scorodit, *Lippmann*; martial arseniate of copper, *Allan*; néoctèse, *Beud.*; skorodit, *Breit.*

Scorza. See Epidote.

Scotch pebble. See Quartz.

Scotine. See Allanite.

Scotiolite. See Hisingerite.

Scoulerite. See Thomsonite.

Scoulérite, Dufr. Al_2O_3, CaO, MgO, SiO_2, H_2O. Massive. Pfeifenstein; pipestone, *Thomson*; terre à pipe.

Scovillite. See Rhabdophane.

Sea salt. See Halite.

Sebesite. See Amphibole.

Sechsseitige weisse durchsichtige schörlsäuler mit oder ohne pyramide an der spitze. See Nephelite.

Sedativesalz, natürliches. See Sassolite.

SEEBACHITE, *Bauer.* A zeolite. Orthorhombic. Herschelite, *Ulrich.*

Seeerz. See Limonite.

Seesalz. See Halite.

Seidlitzensis. See Epsomite.

Seifenstein. See Saponite.

Seifenzinn. See Cassiterite.

Sel acide phosphorique martial. See Plumbogummite.

Sel admirable. See Mirabilite.

Sel amer. See Epsomite.

Sel ammoniac. See Sal ammoniac.

Sel ammoniac secret de Glauber. See Mascagnite.

Sel ammoniaque. See Sal ammoniac.

Sel capillaire. See Epsomite.

Sel commun. See Halite.

Sel d'Angleterre. See Epsomite.

Sel de cuisine. See Halite.

Sel de Duobus. See Aphthitalite.

Sel d'Epsom. See Epsomite.

Sel de Glauber. See Mirabilite.

Sel de Sedlitz. See Epsomite.

Sel de Tartarie. See Sal ammoniac.

Sel en pierre. See Halite.

Sel gem. See Halite.

Sel gemme. See Halite.

Sel gemmerum. See Halite.

Sel marine. See Halite.

Sel polychreste de Glaser. See Aphthitalite.

Sel secret de Glauber. See Mascagnite.

Sel sédatif. See Sassolite.
Sel volatile. See Sal ammoniac.
Seladonite. See Celadonite.
SELBITE, *Haidinger*. $AgCO_3$. Argent carbonaté, *Haüy*; calciforme silver ore, *Kirw.*; carbonate of silver, *Selb*; grausilber, *Lenz*; luftsaures silber, *Widenmann*; plata azul, *del Rio*.
Selce. See Quartz.
Selce di Egitto. See Quartz.
Selen. See Selenium.
Selenate of lead. See Kerstenite.
Selenblei. See Clausthalite.
Selenbleikupfer. See Zorgite.
Selenblei mit selenkupfer. See Zorgite.
Selenblei mit selenquecksilber. See Lehrbachite.
Selenbleispath. See Kerstenite.
Selen-cobalt-lead. See Clausthalite.
Selen-copper-lead. See Zorgite.
Selen-copper-silver. See Eucairite.
Selen-cuprite. See Berzelianite.
Selenic silver. See Naumannite.
Selenic silver lead. See Clausthalite.
Selenic sulphide of mercury and zinc. See Zinc selenide.
Selenic sulphur. See Selensulphur.
Selenide of copper. See Berzelianite.
Selenide of lead. See Clausthalite.
Selenide of lead and cobalt. See Clausthalite.
Selenide of lead and copper. See Berzelianite and Zorgite.
Selenide of mercury. See Onofrite.
Selenide of mercury and lead. See Lehrbachite.
Selenide of silver. See Naumannite.
Selenide of silver and copper. See Eucairite.
Selenide of thallium. See Crookesite.
Seleniet of lead. See Clausthalite.
Seleniferous iron pyrites. See Pyrite.
Selenigsaures bleioxyd. See Kerstenite.
Selenite. See Gypsum.
Selenite of lead. See Kerstenite.
Selenium, del Rio. Se. Native selenium; selen.
Sélénium sulfurifère. See Selensulphur.
Selenium sulphur. See Selensulphur.
Séléniure d'argent. See Naumannite.
Séléniure de cuivre. See Berzelianite.
Séléniure de cuivre et d'argent. See Eucairite.
Séléniure de plomb. See Clausthalite.
Séléniure de plomb et de cuivre. See Zorgite.
Séléniure de plomb et de mercure. See Lehrbachite.
Séléniure de zinc. See Zinc selenide.
Seleniuret equals **Selenide.**
Selenkies. See Pyrite.
Selenkobaltblei. See Clausthalite.
Selenkupfer. See Berzelianite.
Selenkupferblei. See Zorgite.
Selenkupferquecksilber, Plattner.
Selenkupfersilber. See Eucairite.
Selenmercur. See Tiemannite.
Selenmercurblei. See Lehrbachite.
Selenobismutite. See Bismutite.
Selenpalladite. See Allopalladium.
Selenpalladium. See Allopalladium.
Selenquecksilber. See Tiemannite.
Selenquecksilberblei. See Lehrbachite.
Selenquecksilberkupferblei, Plattner.
Selenschwefel. See Selensulphur.
Selenschwefelquecksilber See Onofrite.
Selensilber. See Naumannite.
Selensilberglanz. See Naumannite.
Selensilberkupferblei. See Zorgite.
SELENSULPHUR, *Dana*. SSe. Selenic sulphur; sélénium sulfurifère; selenium sulphur; selenschwefel, *Stromeyer*; soufre sélénié; volcanite.
Selenwismuthglanz. See Guanajuatite.
Selenzink. See Zinc selenide.
SELLAITE, *Struver*. MgF_2. Tetragonal.
Selwynite. See Wolchouskoite.
Séméline. See Titanite.
Semi-carnelian. See Quartz.
Semi-compact mineral pitch. See Pittolium Group.
Semi-opal. See Opal.
SEMSEYITE, *Krenner*. 7 Pbs, 3 Sb_2S_3.
SENARMONTITE, *Dana*. Sb_2O_3. Isometric. Antimoine blanc, *Brochant*; antimoine oxydé; antimoine oxydé octaèdrique, *de Sénarmont*; antimony oxyd; chaux d'antimoine; sarawakite, *Frenzel*; stibite; white antimony.
Seneca oil. See Naphtha.
SEPIOLITE. $Mg_2Si_3O_8+2\,H_2O$. Amorphous. Argile légère; argillomurite; earthy carbonate of magnesia, *Phillips*; keffekill, *Kirw.*; l'écume de mer, *Fr.*; magnesite pt., *Brong.*; magnesite of Salinelle; magnesite of

SEPIOLITE—Continued.
Vallecas; meerschaum, *Germ.*; myrsen, *Kirw.*; pierre de savon du Maroc; schiuma de mare; sepiolith, *Glock.*

Sepiolith. See Sepiolite.

Septaria. See Calcite.

Serbian. See Miloschite.

SERICITE, *List.* $H_3(K, Na)Al_3(SiO_4)_3$.

Sericolite. See Calcite and Gypsum.

Serikolite. See Calcite and Gypsum.

Serikolith. See Calcite and Gypsum.

Serpentaria. See Serpentine.

Serpentinasbest. See Serpentine.

SERPENTINE, *Wall.* $Mg_3Si_3O_7+2H_2O$. *Οφίτης* pt., *Dioscor.*; kypholite, *Breit.*; lapis colubrinus, *Wall.*; lapis serpentinus, *de Boot*; marmor serpentinum, *de Boot*; marmor Zeblicium, *de Boot*; marmor Zöblizense, *Wall.*; ollaris pt., *Wall.*; ophitæ, *Agric.*; ophites pt., *Vitruv.*; rochlandite; serpenstein Germanice, *de Boot*; serpentaria, *Agric.*; steatöid; telgsten pt.; Zöblitzer serpentine, *Cronst.*; zöblitzite.

ANTIGORITE, *Schweizer.*

BOWENITE, *Dana*: Nephrite.

CHRYSOTILE, *von Kob.*; amiant; amianthe; amianthoide; aimanthoide; amianthus pt.; chromochlorite, *Herm.*; pelhamine, *Shep.*; Schillernder asbest, *von Kob.*; serpentinasbest; serpentine asbestus.

KELYPHITE, *Schrauf.*

MARMOLITE, *Nutt.*: Kerolite; marmolith; magnésie hydratée siliceuse, *Lévy.*

PICROLITE, *Haus.*: Baltimorite, *Thom.*; metaxite, *Breit.*; pikrolite; pikrolith.

PORCELLOPHITE: Meerschaum of Sala; meerschaum of Taberg.

PRECIOUS SERPENTINE: Edler serpentin; noble serpentine.

PYCNOTROPE: Pyknotrop, *Breit.*

REFDANSKITE, *Herm.*

RETINALITE, *Thom.*: Résinalite, *Dufr.*: retinalith; vorhauserite, *Kenng.*

SILICIOPHITE.

THERMOPHYLLITE, *Nord.*

WILLIAMSITE, *Shep.*: Williamsonite.

SERPENTINE ROCKS.

APHANITES. EUPHOTIDE (?). GABBRO ROSSO. OPHIOLITE: Calcareous ophiolite; dolomitic ophiolite; ranocchia; verde antico; verde antique; verde di Prato; verde di Sus; vert antique.

SERPENTINE—Continued.

Serpenstein Germanice. See Serpentine.

Serpentine asbestus. See Serpentine.

Serpentine aus des Malenkerthal. See Villarsite.

Serpentine d'Aker. See Ripidolite.

SERPIERITE, *Des Cloizeaux.* A hydrous basic sulphate of zinc and copper. Orthorhombic.

Sesquiarseniet of iron. See Leucopyrite.

Sesquicarbonate de soude. See Trona.

Sesquicarbonate of soda. See Trona.

Sesquisilicate of manganese. See Rhodonite.

Settlingite. See Copalite.

Settling stones resin. See Copalite.

Severite. See Halloysite and Montmorillonite.

Sexaluminate of lead. See Plumbogummite.

Sexangulites. See Galenite.

Seybertine. See Seybertite.

SEYBERTITE, *Clemson.* $(Ca, Mg)_{12}(Al_2, Fe_2)_6Si_5O_{40}+H_2O$. Monoclinic. Broncit; bronzite, *Finch*; chrysophan, *Breit.*; clintonite, *Mather*; clintonite, im handel, *Breit.*; diallage fibro-laminaire métalloïde, *Haüy*; holmesite, *Thomson*; holmite, *Thomson*; rhombohedral pearl mica, *Mohs*; seybertine.

BRANDISITE, *Liebener*: Disterite; disterrite, *Breit.*

Seydschützensis. See Epsomite.

Shell marble. See Calcite.

SHEPARDITE, *Haidinger.* Cr_2S_3. Meteoric. Bishopvillite; chrome sulfuré; schreibersite, *Shep.*

Shorl equals Schorl.

Siberite. See Tourmaline.

Sicilianite. See Celestite.

SIDERAZOTE, *Silvestri.* Fe_8N_2.

Siderische felsglimmer. See Lepidolite.

Siderite. See Lazulite, Pharmacosiderite, Quartz, and Sapphirine.

SIDERITE, *Haid.* $FeCO_3$. Hexagonal. Brachytypous parachrose **baryt**, *Mohs*; braunspath pt.; **brown spar** pt.; calcareous iron, *Kirwan*; **carbonate of iron**, *Phillips*; **chalybite**,

SIDERITE—Continued.
Glock.; chaux carbonatée ferrifère, *H.*; eisenkalk; eisenspath, *Haus.*; fer carbonaté, *Dufr.*; fer oxydé carbonaté, *H.*; fer spathique, *de Lisle*; ferricalcites, *Kirw.*; ferro aerato, *Petr.*; ferrum cum magnesio et terra calcarea acido aëro mineralisatum, *Bergm.*; flinz; iron carbonate; iron spar; järn med kalkjord förenadt, *Cronst.*; junckerite, *Dufr.*; kohlensaures eisen; mine d'acier, *Leymerie*; mine de fer blanche, *von Born*; mine de fer spathique, *Brochant*; minera ferri alba spathiformis, *Wall.*; parachrose baryt, *Mohs*; pelosiderite; piedra de acero, *Herrg.*; siderose, *Beud.*; sparry iron, *Allan*; sparry iron ore, *Kirw.*; sparry iron stone, *James.*; spatformig jernmalm, *Wall.*; spatheisenstein, *Reuss*; spathiger eisen, *Wern.*; spathic iron; spathose iron, *Phillips*: spherosiderite, *Haus.*; stahlreicheisen, *Gesner*; stahlstein, *Cronst.*; steel ore; vena ferri jecoris colore optima, *Gesner*.

CLAY IRON STONE pt.: Argillaceous ironstone; ball iron; beetlestones, *Wales*; blackband; clay iron ore pt.; eisenniere, *Wern.*; hirseneisenstein; klapperstein; mine de fer limoneuse en roche, *de Lisle*; mushet stone; oolitic clay iron; thoneisenerz; thoneisenstein.

OLIGONITE, *Haus.*: Oligonspath, *Breit.*; oligonspar.

SIDEROPLESITE, *Breit.* Siderodot, *Breit.*

THOMAITE, *Mayer*.

CARBONOPHOSPHATE DE FER, *Karst.*: A mixture.

HYDROCARBONATE DE FER, *Thomson*: Alteration.

Siderite aimant. See Magnetite.
Siderite chromifère. See Chromite.
Siderite titanique. See Menaccanite.
Siderite zincifère. See Franklinite.
Sideritine. See Pitticite.
Sideritis. See Magnetite.
Sideritquarz. See Quartz.
Siderobol. See Halloysite.
Sideroborine. See Lagonite.
Siderocalcit. See Aukerite.
Siderochalcit. See Clinoclasite.
Siderochrome. See Chromite.
Sideroclepte. See Chrysolite.
Sideroconite. See Calcite.
Siderodot. See Siderite.
Sideroferrite. See Iron.
Siderographite. See Iron.
Sideromelane. See Orthoclase.
SIDERONATRITE, *Raimondi.* $Na_2Fe_2(SO_4)_3+6\,H_2O$. Crystalline.
Siderophyllite. See Biotite.
Sideroplesite. See Siderite.
Siderosbole. See Halloysite.
Sideroschisolite, Wernekink. $Fe_4SiO_6+H_2O$. Hexagonal. Sideroschisolithe.
Sideroschisolithe. See Sideroschisolite.
Siderose. See Siderite.
Siderosilicite. See Palagonite.
Siderotantal. See Tantalite.
Sideroxene. See Hessenbergite.
Sieberite. See Tourmaline.
Siegburgite, von Lasaulx. Fossil resin.
Siegelerde. See Sphragidite.
Siegelstein. See Magnetite.
Siegenite. See Linnæite.
Sienna marble. See Calcite.
SILAONITE, *Fernandez.* Bi_3Se.
Silbeloit. See Pyroxene.
Silber. See Silver.
Silber, grau. See Selbite.
Silber, güldisches. See Silver.
Silberamalgam. See Amalgam.
Silberantimonglanz. See Miargyrite.
Silberarsenik. See Dyscrasite.
Silberblende. See Pyrargyrite.
Silberfahlerz. See Tetrahedrite.
Silberglanz. See Argentite.
Silberglanz, biegsamer. See Sternbergite.
Silberglas. See Argentite.
Silberhornerz. See Cerargyrite.
Silberkerat. See Cerargyrite.
Silberkies. See Argentopyrite.
Silberkobalt. See Wad (?).
Silberkupferglanz. See Stromeyerite.
Silbermulm. See Argentite.
Silberphyllinglanz. See Silverphyllinglanz.
Silberschwärze. See Argentite.
Silberspiessglanz. See Dyscrasite.
Silber-und-antimon. See Freieslebenite.
Silberweiss. See Talc.
Silberwismutherz. See Chilenite and Schapbachite.
Silberwismuthglanz. See Chilenite and Schapbachite.
Silex. See Quartz.
Silex agathe. See Quartz.

Silex cachalong. See Opal.
Silex calcédoine. See Quartz.
Silex cornaline. See Quartz.
Silex corné. See Orthoclase and Quartz.
Silex de la craie. See Quartz.
Silex ex eo ictu ferri facile ignis elicitur—ex cubis allisque figuris intersectis constans. See Orthoclase.
Silex meulière cellulaire. See Quartz.
Silex nectique. See Opal.
Silex niger cum cruce candida. See Andalusite.
Silex pyromaque. See Quartz.
Silex résinite. See Opal.
SILFBERGITE. $Fe_4Mn(Mg, Ca)_2(SiO_3)_7$.
Silica rock. See Opal.
Silicate du Coromandel. See Tscheffkinite.
Silicate of alumina, oxyd of iron and a new earth. See Gadolinite.
Silicate of bismuth. See Eulytite.
Silicate of cerium. See Cerite.
Silicate of iron. See Fayalite.
Silicate of magnesia and iron. See Chondrodite.
Silicate of manganese. See Rhodonite.
Silicate of yttria. See Yttria silicate.
Silicate of zinc. See Calamine and Willemite.
Silicate of zirconia. See Zircon.
Silice. See Quartz.
Silice fluatée alumineuse. See Topaz.
Silice gélatineuse. See Opal.
Siliceous aluminite. See Allophane.
Siliceous anhydrous gypsum. See Anhydrite.
Siliceous borate of lime. See Datolite.
Siliceous calamine. See Calamine.
Siliceous copper. See Chrysocolla.
Siliceous feldspar. See Albite.
Siliceous hydrate of magnesia. See Brucite.
Siliceous limestone. See Calcite.
Siliceous oxide of cerium. See Cerite.
Siliceous oxide of manganese. See Rhodonite.
Siliceous oxide of zinc. See Calamine.
Siliceous schistus. See Quartz.
Siliceous sinter. See Opal and Quartz.
Silicicalce. See Calcite.
Siliciferous hydrate of alumina. See Collyrite.
Silicif[illegible] of cerium. See
Siliciferous oxide of manganese. See Rhodonite.
Silicified coral. See Quartz.
Silicified shells. See Quartz.
Silicified sponge. See Quartz.
Silicified wood. See Quartz.
Siliciophite. See Serpentine.
Silicite. See Labradorite.
Silicoborocalcite. See Howlite.
Silico-calcareous oxide of titanium. See Titanite.
Sillimanite. See Fibrolite.
Silvane blanc. See Sylvanite.
Silvane lamelleux. See Nagyagite.
Silvane natif. See Tellurium.
Silvanite. See Tellurium and Sylvanite.
SILVER, *Ag.* Isometric. **Argent,** *Fr.*; **argent natif,** *H.*; **argent vierge,** *de Lisle*; **diana,** *Alchem.*; **gediegen silber,** *Germ.*; **hexahedral silver,** *Mohs*; **késeph,** *Hebrew*; **luna,** *Alchem.*; **native silver**; **plata silber,** *Germ.*
GÜLDISCH SILBER, *Haus.*
KÜSTELITE, *Breit.*
Silver, antimonial. See Dyscrasite.
Silver, antimonial sulphuret. See Freieslebenite and Pyrargyrite.
Silver, arsenical. See Dyscrasite.
Silver arsenide, Forbes. Ag, Fe, Co, As.
Silver arseno-antimonide. Ag, Sb, As, Fe.
Silver, bismuth. See Chilenite and Schapbachite.
Silver, black. See Stephanite and Argentite.
Silver, brittle sulphuret. See Stephanite.
Silver, bromic. See Bromyrite.
Silver carbonate. See Selbite.
Silver chloride. See Cerargyrite.
Silver chlorobromide. See Embolite.
Silver, cupreus sulphuret. See Stromeyerite.
Silver, flexible. See Sternbergite.
Silver, flexible sulphuret. See Sternbergite.
Silver, gray. See Freieslebenite.
Silver glance. See Argentite.
Silver, horn. See Cerargyrite.
Silver, iodic. See Iodyrite.
Silver iodobromide. See Iodyrite.
Silver mulm. See Argentite.
Silver muriate. See Cerargyrite.
Silver, native. See Silver.
Silver selenide. See Naumannite.

Silver sulphide. See Acanthite and Argentite.
Silver telluride. See Hessite.
Silver ore, brittle. See Stephanite.
Silver ore, red. See Proustite and Pyrargyrite.
Silver ore, ruby. See Proustite and Pyrargyrite.
Silver ore, selenic. See Naumannite.
Silver ore, sulphuret. See Argentite and Acanthite.
Silver ore, telluric. See Hessite.
Silver ore, vitreous. See Argentite.
Silveriah arsenical pyrites. See Arsenopyrite.
Silverphyllinglanz*, *Breit. Near Nagyagite. Phyllinglanz, *Platt.*; silberphyllinglanz.
Silver white cobalt. See Cobaltite.
Silvery chalk. See Calcite.
Simlaite. See Pholerite.
Simonyite. See Blödite.
Sinkanite. See Galenite.
Sinopis. See Sinopite.
Sinopische erde. See Sinopite.
Sinopite*, *Hausmann. (Al_2, $Fe_2)O_3$, SiO_2, H_2O. *Σινωπις*, *Theoph.*; argile ocreuse; bol d'Arménie; bole de Sinopis, *Beud.*; bole of Sinope; bolus; rubrica, *Vitruv.*; sinopis, *Pliny*; Sinopische erde, *Klapr.*
Sinople. See Quartz.
Sinter, calcareous. See Calcite.
Sinter, siliceous. See Opal and Quartz.
Sinterkohle. See Mineral coal.
SIPYLITE, *Mallet.* (E, La, Di, etc.)$_3$ (Cb, Ta, W, etc.)$_2O_8$. Tetragonal.
Sirianischer granat. See Garnet.
Sismondine. See Chloritoid.
Sisserskite. See Iridosmine.
Sjoemalm. See Limonite.
Skapolith. See Anorthite, Ekebergite, Paranthite and Wernerite.
Skarbroit. See Allophane.
Skimmer. See Mica.
Skiörl. Equals Schorl.
Skleritinite. See Scleretinite.
Skleroklas. See Dufrenoysite and Sartorite.
Skleroklas arsenomelan. See Sartorite.
Skogbölite. See Tantalite.
Skolecit. See Scolecite.
Skolezit. See Scolecite.
Skolopsite. See Hatlynite.
Skorilite. See Scorilite.
Skörl. Equals Schorl.
Skorodit. See Scorodite.
Skorza. See Epidote.
Skotin. See Allanite.
Skotiolit. See Hisingerite.
Skotiolith. See Hisingerite.
Skovillit. See Rhabdophane.
SKUTTERUDITE, *Haidinger.* $CoAs_3$. Isometric. Arsenikkobaltkies, *Scheer.*; colbalt terasenide; hartkobalterz, *Haus.*; hartkobaltkies, *Breit.*; modumite, *Nicol.*; tesseralkies, *Breit.*
Slaggy augite. See Tachylyte.
Slaggy cobalt. See Erythrite.
Slaggy mineral pitch. See Asphaltum.
Slaglike magnetic iron. See Iserite.
Slate coal. See Mineral coal.
Slate spar. See Calcite.
Slickensides. See Galenite.
Sloanite*, *Meneghini* and *Becki. $R_6Al_{10}Si_{21}O_{78}+6\ H_2O$. Orthorhombic.
Smalte bleue. See Lazulite.
Smaltine. See Smaltite.
SMALTITE, *Dana.* (Co, Fe, Ni)As_2. Isometric. Arsenical cobalt; arsenikkobalt; cobalt blanc, *Broch*; cobalt glance; cobalt gris, *H.*; cobaltum arsenico mineralisatum pt., *Wall.*; cobaltum cineraceum, *Agric.*; cobaltum ferro et arsenico mineralisatum, *Cronst.*; glants-cobalt, *Cronst.*; glantz cobalt; glanzkobald; glanzkobalt; gray cobalt; gray cobalt ore, *Kirw.*; kobalt glantz, *Wall.*; kobaltmalm, *Wall.*; mine de cobalt arsenicale, *de Lisle*; mine de cobalt grise, *de Lisle*; minera cobalti cinerea, *Wall.*; octahedral cobalt pyrites, *James.*; smaltine, *Beud.*; speiskobalt, *Haus.*; speiskobold, *Wern.*; spessartine (?); steel cobalt; tin white cobalt; weisser speiskobold, *Wern.*; white cobalt; white cobalt ore, *James.*

CHELENTITE. Bismuth cobalt; bismuth cobalt erz; cheleusite; kobaltwismutherz; wismuthkobaltkies.

CHLOANTHITE, *Breit.*: Arseniknickel; chathamite, *Shep.*; cloanthite; grauer speiskobold, *Wern.*; nickel arsenide; nickeline blanche; rammelsbergite, *Haid.*; weissnickelerz; weissnickelkies pt., *Breit.*; white nickel.

SAFFLORITE, *Breit.*: Cobalt arsenical ferrifère, *Tondi*; cobalt gris noirâtre, *H.*; eisenkobalterz, *Haus.*; eisenko-

SMALTITE—Continued.
baltkies, *von Kob.*; grauer speiskobold, *Wern.*

Smaragd. See Beryl.

Smaragdite. See Amphibole and Pyroxene.

Smaragdochalcite. See Atacamite and Dioptase.

Smaragdochalzit. See Atacamite and Dioptase.

Smaragdus. See Beryl, Chrysoberyl, and Turquois.

Smectis. See Saponite.

Smectite. See Halloysite.

SMECTITE, *Breit.* $H_6Al_3(SiO_3)_6+9\ H_2O$. Massive. Argile chimique; argile hydraté; argile smectique, *H.*; creta fullonum pt.; fuller's earth, *Kirwan*; malthacit, *Breit.*; malthazit; terra fullonum pt.; terre à foulon, *Fr.*; walkerde, *Germ.*; walkthon, *Germ.*

SMEGMATITE. $Al_2Si_4O_{11}+12\ H_2O$.

Smelite. See Kaolinite.

Smeraldo. See Beryl.

Smergel. See Corundum.

Smirgel. See Corundum.

Smiris. See Corundum.

Smiris ferrea. See Corundum.

Smith ore. See Limonite.

Smithsonite. See Calamine.

SMITHSONITE, *Beudant.* $ZnCO_3$. Hexagonal. Calamine pt., *James.*; calcareous calamine; carbonate of zinc, *Phil.*; dry bone, *Miners*; galmei pt.; galmey pt.; kohlengalmei; pierre calaminaire; rhombohedral calamine, *James.*; rhombohedral zinc baryte, *Mohs*; spath de zinc, *de Lisle*; spathiger galmei, *Karst.*; szaskaite; wohan, *China*; zinc carbonaté, *H.*; zinc spar; zincum acido aëro mineralisatum, *Bergm.*; zinkspath, *Leonh.*

CAPNITE, *Breit.*: Eisenzinkspath; ferruginous zinc spar; kapnit, *Breit.*; monheimite; zinkeisenspath; zinc iron spar.

HERRERITE, *del Rio*: Copper zinc spar; smithsonite, *Genth*; tellure carbonaté, *del Rio.*

NICKELIFEROUS CALAMINE.

Smoke quartz. See Quartz.

Smoky quartz. See Quartz.

Smut. See Mineral coal.

Smyris. See Corundum.

Snarumite, Breit. Near Lepidolite.

Snow. See Water.

Snow, inflammable. C, O, H.

Soapstone. See Montmorillonite, Saponite, and Talc.

Soda. See Natron.

Soda alum. See Mendozite.

Soda, borate of. See Borax.

Soda, carbonate of. See Natron and Trona.

Soda chabazite. See Gmelinite.

Soda, chloride of. See Halite.

Soda copperas. See Jarosite.

Soda feldspar. See Albite.

Soda hornblende. See Arfvedsonite.

Soda mesotype. See Natrolite.

Soda, muriate of. See Halite.

Soda, nitrate of. See Soda nitre.

SODA NITRE. $NaNO_3$. Hexagonal. Caliche; Chili saltpetre; cubic nitre; natron saltpeter, *Leonh.*; natronite; nitrate of soda, *Phil.*; nitratine, *Haid.*; nitre cubique; nitrochlorure de soude; soude nitratée, *de Rivero*; zootinsalz.

Soda spodumene. See Oligoclase.

Soda, sulphate of. See Mirabilite and Thenardite.

Soda table spar. See Pectolite.

Soda wollastonite. See Pectolite.

Sodaite. See Ekebergite.

Soda-lime feldspar. See Andesite and Oligoclase.

SODALITE, *Thomson.* $Na_5(AlO)_4Cl(SiO_3)_4$. Isometric. Ditröyte; dodechedral kouphone spar, *Mohs*; odalite; sodalithe.

Sodalithe. See Sodalite.

Sodium salts equal **soda salts.**

Sogenannte grüneisenerde. See Hypochlorite.

Soimonite. See Corundum.

Soldanite. See Alunogen.

Solfatarite. See Alunogen and Mendozite.

Solpho. See Sulphur.

Sombrerite, Phipson. 75–90 per centum $Ca_3P_2O_8$; 3–4 per centum $CaCO_3$; 7–9 per centum clay.

Somervillite. See Chrysocolla and Melilite.

Sommait. See Leucite.

Sommarugaite. See Gersdorffite.

Sommite. See Nephelite.

Sonnenstein. See Oligoclase and Orthoclase.

OMAITE, *Goldsmith*. $Mg_3Al_2(SO_4)_6 + 33\ H_2O$. Crystalline.
y silver ore. See Argentite.
DAVALITE. $(Mg, Fe)_3Al_2(SiO_3)_6$.
Massive. Sordawalit, *Nord*.
lawalit. See Sordavalite.
o ceruleo. See Cyanite.
o nero. See Tourmaline.
. See Copperas group.
. See Copperas group.
de. See Natron.
de blanche d'Egypte. See Natron.
de boratée. See Borax.
de carbonatée. See Natron and Trona.
de carbonatée prismatique. See Thermonatrite.
de muriatée. See Halite.
de muriatée gypsifère. See Anhydrite.
de nitratée. See Soda nitre.
de sulfatée. See Mirabilite.
fre. See Sulphur.
fre rouge des volcans. See Realgar.
fre sélénié. See Selensulphur.
s-sulfate de cuivre. See Brochantite.
ADAITE, *von Kobell*. $Mg_5Si_6O_{17} + 4\ H_2O$. Amorphous. Quincite, *Berth.*; quincyite; strakonitzite, *von Zeph.*
niolite. See Tetrahedrite.
niolith. See Tetrahedrite.
nish chalk. See Talc.
nischer lazulith. See Iolite.
nish shirl. See Andalusite.
nish snuff. See Tellurium.
nish white. See Calcite.
r. See Calcite and Quartz.
rable tin. See Cassiterite.
rgelgrüne steinkrystalle aus Spanien. See Apatite.
rgelstein. See Apatite.
rkies. See Marcasite.
rry iron. See Siderite.
rry iron-ore. See Siderite.
rry ironstone. See Siderite.
rtaite. See Calcite.
rtalite. See Zincite.
tformig jernmalm. See Siderite.
th adamantin. See Corundum.
th adamantin d'un rouge violet. See Andalusite.
th brunissant. See Ankerite and Dolomite.

Spath calcaire. See Calcite.
Spath calcaire cristallisé en prismes hexagones dont les deux bouts sont striés du centre à la circonférence. See Aragonite.
Spath calcaire dont les deux bouts sont lissés. See Aragonite.
Spath chatoyant. See Enstatite and Pyroxene.
Spath composé. See Dolomite.
Spath cubique. See Anhydrite.
Spath de glace. See Anorthite and Orthoclase.
Spath de zinc. See Smithsonite.
Spath d'Islande. See Calcite.
Spath en table. See Wollastonite.
Spath étincillant. See Orthoclase.
Spath, fluor. See Fluorite.
Spath, fusible. See Fluorite, Barite, and Orthoclase.
Spath magnésien. See Dolomite and Magnesite.
Spath perlé. See Ankerite and Dolomite.
Spath pesant. See Barite.
Spath pesant aéré. See Witherite.
Spath pesant vert. See Torbernite.
Spath schisteux. See Calcite.
Spath séléniteux. See Gypsum.
Spath séléniteux de Sicile. See Strontianite.
Spath vitreux. See Fluorite.
Spatheisenstein. See Siderite.
Spathic iron. See Siderite.
Spathiger-eisenstein. See Siderite.
Spathiger-galmei. See Smithsonite.
Spathiger-gips. See Gypsum.
Spathiges-eisen. See Siderite.
SPATHIOPYRITE. $(Co, Fe, Cu)_3(As, S)_3$. Orthorhombic.
Spathose iron. See Siderite.
Spathum ponderosum. See Barite.
Spatig kalksten. See Calcite.
Spato sedativo. See Boracite.
Spatum Bononiense. See Barite.
Spatum calcarium cryst, dodecaedrum album, opacium et lamellis quatuor erectis, etc. See Harmotome.
Spatum plumbi. See Cerussite.
Spatum pyrimachum. See Orthoclase.
Spatum scintillans. See Orthoclase.
Spatum tessulare. See Barite.
Spatum vitreum. See Fluorite.
Spear pyrites. See Marcasite.

Speckstein. See Pinite, Prochlorite, and Talc.

Specularis lapis adulterinus flexiles sexangulorum. See Mica group.

Specular galena. See Galenite.

Specular iron. See Hematite and Menaccanite.

Specular oxide of iron. See Hematite.

Specular oxide of iron, micaceous. See Hematite.

Speerkies. See Marcasite.

Speglande eisenglimmer. See Hematite.

Speglande jernmalm. See Hematite.

Speisglanz. Equals Spiessglanz.

Speisglas. Equals Spiessglas.

Speiskobalt. See Smaltite.

Speiskobalt, grauer. See Smaltite.

Speiskobalt, weisser. See Smaltite.

Speiskobold. See Smaltite.

Sperkise. See Marcasite.

Spessartine. See Garnet.

Spessartite. See Garnet.

SPHÆRITE, *von Zepharovich.* $Al_{10}P_4O_{25}$. Crystalline. Phosphate d'alumine de Bourbon.

SPHÆROCOBALTITE, *Weisbach.* $CoCO_3$. Hexagonal. Kobaltspath.

Sphærolite. See Orthoclase.

Sphærolith. See Orthoclase.

Sphärolites. See Crystallites.

Sphærosiderite. See Siderite.

Sphærostilbite. See Stilbite.

Sphærulite. See Orthoclase.

SPHALERITE, *Glocker.* ZnS. Isometric. Black jack, *Miners*; blände, *Wall.*; blende, *Agric.*; dodocahedral garnet blende, *Mohs*; fibrous blende; galena inanis, *Agric.*; garnet blende; mock lead, *Miners*; pseudogalena, *Wall.*; radiated blende; scaly blende; schaalenblende; schwarze blende; sulphuret of zinc, *Phil.*; wild lead, *Cornwall*; zinc blende, *Jameson*; zinc sulfuré, *H.*; zinc sulphide; zinc sulphuret; zincum, Fe et S mineralisatum, *Bergm.*; zincum, S, As et Fe mineralisatum, *Wall.*; zinkblende, *Haus.*

AURIFEROUS BLENDE.

CADMIFEROUS BLENDE: Przibramite, *Huot.*

CLEIOPHANE, *Nuttal*, etc.: Nuttal; white blende.

CUPRIFEROUS BLENDE: Rahtite, *Shep.*

SPHALERITE—Continued.

FERRIFEROUS BLENDE: Mariatite; marmatite, *Boussing.*

PLUMBIFEROUS BLENDE.

SULPHUR-BEARING: Marasmolite, *Shep.*

Sphen. See Titanite.

Sphene. See Titanite.

SPHENOCLASE. $(Ca, Fe, Mg, Mn)_5 Al_2Si_6O_{21}(?)$. Sphenoklas, *von Kob.*

Sphenoklas. See Sphenoclase.

Sphérolite. See Orthoclase.

Spherostilbite. See Stilbite.

Sphérulite. See Orthoclase.

Sphragid. See Cimolite and Sphragidite.

Sphragidite. $(Al_2, Fe_2)O_3, SiO_2, H_2O$, etc. *Λημνία γῆ, Dioscor.*; *Σφραγὶς λήμνια*; lemnian earth; siegelerde; sphragid, *Karst.*; sphragite, *Dufr.*; terra Lemnia, *Plin.*; terra sigillata; terre de Lemnos; terre sigilée.

Sphragite. See Sphragidite.

Spiauterit. See Wurtzite.

Spiegelglanz. See Wehrlite.

Spiessglanz, gediegen. See Antimony.

Spiessglanz, grau. See Stibnite.

Spiessglanz, weiss. See Valentinite.

Spiessglanzblei. See Bournonite.

Spiessglanzbleierz. See Bournonite.

Spiessglanzblende. See Kermesite.

Spiessglanzocher. See Cervantite.

Spiessglanzokker. See Cervantite.

Spiessglanzsilber. See Dyscrasite.

Spiessglas. See Antimony and Stibnite.

Spiessglaserz. See Stibnite.

Spiessglaserz, grau. See Stibnite.

Spiessglaserz, roth. See Kermesite.

Spiessglaserz, weiss. See Valentinite.

Spiessglassilber. See Dyscrasite.

Spilyte. See Albite.

SPINEL, *Kirwan.* $MgAl_2O_4$. Isometric. Alumine magnésiée, *H.*; anthrax; dodocahedral corundum, *Mohs*; spinell; spinelle, *H.*

CEYLONITE, *James.* (*iron manganese spinel*): Candite, *Bourn.*; ceylanite, *Dela.*; pléonaste, *H.*; spinelle pléonaste; zeilanite; zeylanite, *Karst.*

CHLOROSPINEL, *G. Rose* (*magnesia iron spinel*): Gahnit, *de Marin.*

MAGNESIA LIME SPINEL, *Thom.*

PICOTITE, *Charpentier*, (*chrome spinel*): Chrome ceylonite; diopside compacte, *Dufr.*; lherzolite, *Dela.*; picolite.

SPINEL—Continued.
RUBY SPINEL (*magnesia spinel*): Almandine ruby; bacham, *Malabar*; Balais; Balais ruby; Balas ruby; Ballagius carbunculus pt.; carbunculus ruber parvus; gelblichter rubin, *Agric.*; goutte de sang; lychnis pt., *Plin.*; rubicelle; rubin orientales octaedrice; rubinus pt.; rubis spinelle octaèdre, *de Lisle*; spinel ruby; spinella; spinelle Balais; spinelle ruby.
Spinel ruby. See Spinel.
Spinell. See Spinel.
Spinella. See Spinel.
Spinellane. See Nosite.
Spinelle. See Spinel.
Spinelle Balais. See Spinel.
Spinelle bleue. See Hauynite.
Spinelle pléonaste. See Spinel.
Spinelle ruby. See Spinel.
Spinelle zincifère. See Gahnite.
Spinelline. See Nosite.
Spinellus superius. See Gahnite.
Spinthère. See Titanite.
Spiritus lethalis. See Carbonic acid.
Spiritus mineralis. See Carbonic acid.
Spiritus sylvestris. See Carbonic acid.
Spitsglas, gedieget. See Antimony.
Spitsglasmalm. See Stibnite.
Splent coal. See Mineral coal.
Splint. See Mineral coal.
Splint coal. See Mineral coal.
Spliintery garnet. See Garnet.
Splittriger hornstein. See Orthoclase and Quartz.
Splittriger lazulit. See Lazulite.
Splittriger wernerit. See Pinite.
SPODIOSITE, *Tiberg.* $5\,Ca_3(PO_4)_2 . 4\,CaF_2$. Orthorhombic.
SPODUMENE, *d'Andrada.* $Li_2Al_2(SiO_3)_4$. Monoclinic. Hiddenite, *J. L. Smith*; keityoit; prismatic triphane spar, *Mohs*; schorl spatheux; triphane, *H.*; zéolithe de Suède.
Spongiform quartz. See Opal.
Spreustein. See Natrolite.
Sprödglanzerz. See Stephanite.
Sprödglaserz. See Stephanite and Polybasite.
Sprudelstein. See Aragonite.
Spuma lupi. See Wolframite.
Stachelschweinstein. See Limonite.
Stängelkalk. See Aragonite.
Staffelite, Stein. CaO, P_2O_5, Co_2, F, etc.
Staffelitoid.
Stagmatite. See Lawrenceite.
Stagno. See Tin.
Stagno bruna. See Cassiterite.
Stagno nera. See Cassiterite.
Stahlkobalt. See Cobaltite.
Stahlreicheisen. See Siderite.
Stahlstein. See Siderite.
Stalactite. See Calcite.
Stalactite globuleuse. See Calcite.
Stalactites flos ferri. See Aragonite.
Stalactites panniformes. See Calcite.
Stalactitic limonite. See Limonite.
Stalactitic manganese. See Wad.
Stalagmite. See Calcite.
Stalagmites coralloides. See Aragonite.
Stalagmitic marble. See Calcite.
STANEKITE, *Dana.* $C_{29}H_{44}O_6$. Pyroretin.
Stangenkohle. See Mineral Coal.
Stangenschörl, weisser. See Topaz.
Stangenspath. See Barite and Topaz.
Stangenstein. See Topaz.
Stanglicher thoneisenstein. See Limonite.
Stanniferous pyrite. See Pyrite.
Stannine. See Stannite.
Stannite. See Cassiterite.
STANNITE, *Dana.* Cu_2FeSnS_5. Isometric. Bell metal ore; étain pyriteux, *Brochant*; étain sulfuré, *H.*; geschwefeltes zinn, *Klapr.*; hexahedral copper glance, *Mohs*; or musif natif; stannine, *Beud.*; sulphuret of tin, *Phillips*; tin pyrites, *Kirw.*; tin sulphuret, *Phillips*; zinnkies, *Wern.*
Stannolite. See Cassiterite.
Stannum. See Tin.
Stannum calciforme. See Cassiterite.
Stannum ferro et arsenico mineralisatum. See Cassiterite.
Stannum spathosum subdiaphanum album. See Scheelite.
Stanzaite. See Andalusite.
Staphyline malachite. See Chrysocolla.
Star quartz. See Quartz.
Star ruby. See Corundum.
Star sapphire. See Corundum.
Star stone. See Corundum.
Stassfurthite. See Boracite and Huyssenite.
Stassfurtit. See Boracite and Huyssenite.
Statuary marble. See Calcite.
Staurobaryte. See Harmotome.
Staurolite. See Harmotome.

STAUROLITE, *Delamétherie.* (Fe, Mg, Mn)$_3$Al$_4$(AlO)$_8$(HO)$_2$(SiO$_4$)$_8$. Orthorhombic. Basaltes crystallisatus, *Cronst.*; Basler taufstein; croisette, *Daub.*; crucilith, *Dela.*; granatite, *Wern.*; grenatite, *Saus.*; lapis crucifer; pierres de croix, *de Robien*; prismatic garnet, *Jameson*; prismatoidal garnet, *Mohs*; schorl cruciforme pt., *de Lisle*; staurolith, *Karst.*; staurotide, *Dana*; xantholite.

NORDMARKITE: Manganese staurolite.

ZINC STAUROLITE.

Staurolith. See Staurolite.

Staurotide. See Staurolite.

Staurotypous kouphone spar. See Phillipsite.

Steargillite. See Montmorillonite.

Steatargillite, Schmid. Impure Delessite (?).

Steatite. See Talc.

Steatite of Cornwall. See Saponite.

Steatite of Snarum. See Penninite.

Steatoid. See Serpentine.

Steel cobalt. See Smaltite.

Steel ore. See Siderite.

Steelcite. See Mordenite.

STEENSTRUPINE. La, Di, Ce, Th, etc., SiO$_2$. Hexagonal.

Steinhaillite. See Iolite.

Steinheilite. See Iolite.

Steinkohle. See Mineral coal.

Steinmannite. See Galenite.

Steinmark. See Halloysite, Kaolinite, and Pinite.

Steinmark von Rochlitz. See Kaolinite.

Steinöl. See Naphtha.

Steinsalz. See Halite.

Stellite. See Pectolite.

Stengelkobalt. See Cobaltite.

STEPHANITE, *Haidinger.* 5 Ag$_2$S, Sb$_2$S$_3$. Orthorhombic. Argent antimonié sulfuré noir, *H.*; argent fragile, *de Born.*; argent noir pt., *Dela.*; argent sulfuré aigre; argent sulfuré fragile, *Fr.*; argent vitreux aigre, *Broch.*; argentum mineralisatum nigrum fragile, *de Born.*; argentum rude nigrum (?) *Agric.*; black silver; brittle silver glance, *Jameson*; brittle silver ore, *Allan*; brittle sulphuret of silver, *Phillips*; melanglanz, *Mohs*; la plata negra, *Herrg.*; minera spongiosa, *Wall.*; negrillo; prismatic melane glance, *Mohs*; psathurose; psaturose, *Beud.*; rhomboidal silver glance, *Jons*; rocherzmelanglanz; röschgewächs, *Hungary*; schvartsertz pt., *Wall.*; schwarzerz pt., *Agric.*; schwarzgiltigerz, *Wern.*; schwarzgültigen, *Leonh.*; sprödglanzerz, *Haus.*; sprödglaserz, *Wern.*; svartgylden, *Wall.*; weissgiltigerz; white silver.

STEPHANITE—Continued.

Stephanstein. See Quartz.

Stephensonite, Shepard. CuO, CO$_2$, SO$_3$, H$_2$O.

STERCORITE, *Herapath.* Na$_2$(NH$_4$)$_2$ P$_2$O$_7$+9 H$_2$O. Crystalline. Ammonia and soda phosphate; microsmic salt; native salt of phosphorus; salt of phosphorus; sterkorit.

Stercus diaboli. See Dysodile.

Sterkorit. See Stercorite.

Sterlingite. See Damourite and Zincite.

STERNBERGITE, *Haidinger.* AgFe$_2$S$_3$. Orthorhombic. Argent sulfuré ferrifère; argent sulfuré flexible, *Bourn.*; biegsamer silberglanz; flexible silver ore, *Bourn.*; flexible sulphuret of silver, *Phil.*; prismatic eutome glance.

Sternquarz. See Quartz.

Sternsaphir. See Corundum.

Sternstein. See Corundum and Scolecite.

Stetefeldtite, Riotte. H$_2$Sb$_2$O$_5$, mixed with oxides of Ag, Cu, Fe, etc. (?).

Stibi. See Stibnite.

Stibianite, Goldsmith. Sb$_2$O$_5$+H$_2$O.

Stibiconise. See Cervantite and Stibiconite.

STIBICONITE, *Brush.* H$_2$Sb$_2$O$_5$. Antimonial ochre; antimonochre pt.; antimonoker pt., *Leonh.*; antimony ochre pt.; stibiconise, *Beud.*; stiblite; stiblith, *Blum.* and *Delffs.*

Stibilite. See Stilbite.

Stibine See Stibnite.

Stibioferrite, Goldsmith. 6 Sb$_2$O$_5$. 10 Fe O$_3$. 45 H$_2$O.

Stibiogalenite. See Bindheimite.

Stibiohexargentite. See Dyscrasite.

Stibiolite. See Stilbite.

Stibiotriargentite. See Dyscrasite.

Stibite. See Valentinite and Senarmontite.

Stibium. See Antimony and Stibnite.

Stiblite. See Stibiconite.

See Stibiconite.

TE, *Dana*. Sb_2S_3. Orthorhom- *Στίμμι*, *Στίβι*, *Πλατνόφθαλ- Dioso.*; antimoine gris, *Bro-*; antimoine sulfuré, *H.*; anti- sulfuré capillaire, pt., *H.*; anti- lanz, *Germ.*; antimon, prisma- cher; antimonit, *Haid.*; anti- e, *B.* and *M.*; antimonium sul- mineralisatum, *Wall.*; anti- glance; antimony sulphuret; tiferous antimony ore; grau- glanzerz, *Haus.*; grauspiessglas- *ern.*; gray antimony, *James*; lu- etallorum, *Alchem.*; minera an- ii, *Wall.*; platyophthalmon, *An-*; prismatoidal antimony glance, ; spiessglas, *Basil Valentine*; glaserz, *Brück.*; spitsglas- , *Wall.*; stibi, *Pliny*; stibine, ; stibium, *Pliny*; stimmi, *Pliny*; urated antimony, *Kirw.*; sulphu- antimony, *Phillips*.

See Antimony.

H. See Nitrogen.

. See Orthoclase.

lättriger. See Heulandite and te.

on Aachen. See (?).

See Heulandite.

'E, *Haüy*. $(Na_2, Ca)Al_2Si_6O_{16}+$. Orthorhombic. Blättricher pt., *Wall.*; blättrich strahliger , *Mohs*; desmine, *Breit.*; foli- zeolite, pt. *James.*; foresite; *Rath*; garbenstilbite; meso- pt., *H.*; prismatoidal kouphone *Mohs*; radiated zeolite, *Jameson*; hite; sphærostilbite, *Beud.*; ostilbite; stibilite; stibiolite; te préhnite, *Dufr.*; strahlig r h, *Wern.*; strahlzeolith, *Wern.*; rite, *Shep.*; zeolite pt., *Cronst.*; e commune, *Nap.*; zéolite na- *Dela.*; zeolites cryst. crystalli ntrum tendentes, *Cronst.*; zeo- acie selenitica lamellaris, *Wall.*; he feuilletée; zéolithe rayon- *Brochant*.

anamorphique. See Heulandite.

le Skye. See Laumontite.

rangée. See Fassaite.

préhnite. See Stilbite.

. See Opal.

STILPNOMELANE, *Glocker*. $(R''_3, R'''_2(SiO_3)_3+2\ H_2O$. Hexagonal. Chalcodite, *Shep.*

STILPNOSIDERITE, *Ullman*. $H_2Fe_2O_4$.

Stimmi. See Stibnite.

Stinkfluss. See Fluorite.

Stinkkalk. See Calcite.

Stinkkohle. See Dysodile.

Stinkmergel. See Calcite.

Stinkquarz. See Quartz.

Stinkstein. See Calcite.

Stinkstone. See Calcite.

Stinkzinnober. See Cinnabar.

Stirlingite. See Iron manganese chrysolite and Zincite.

Stolpenit. See Montmorillonite.

STOLZITE, *Haidinger*. $PbWO_4$. Tetragonal. Bleischeelat; plomb tungstaté, *Dufr.*; scheelbleierz, *Naum.*; scheelbleispath, *Breit.*; scheelitine, *Nicol*; scheelsaures blei; tungstate of lead, *Phil.*; wolframbleierz.

Stone coal. See Mineral coal.

Stone salt. See Halite.

Stones, meteoric. See Meteorites.

Stony coal. See Mineral coal.

Stony comfits. See Calcite.

Stony icicle. See Calcite.

Strahlbaryt. See Barite.

Strahlenblende. See Wurtzite.

Strahlenerz. See Clinoclasite.

Strahlenkupfer. See Clinoclasite.

Strahlerz. See Clinoclasite.

Strahlige grüneisenerde. See Prochlorite.

Strahliger hydrargillit. See Wavellite.

Strahliger zeolith. See Stilbite.

Strahliges olivenerz. See Clinoclasite.

Strahlite commune. See Amphibole.

Strahlkies. See Marcasite.

Strahlkobalt. See Arsenopyrite.

Strahlstein. See Amphibole, Dufrenite, Epidote, and Siderite.

Strahlstein, körniger. See Amphibole and Pyroxene.

Strahlzeolithe. See Stilbite.

Strakonitzite. See Spadaite.

Stralige natrum. See Trona.

Stralite. See Epidote.

Stralskörl. See Amphibole.

Stratopeite. See Neotocite.

Stream tin. See Cassiterite.

STRENGITE, *Nies.* $Fe_2P_2O_8+4\ H_2O$. Orthorhombic.

Striegisan. See Peganite.

STRIGOVITE, *Becker* and *Websky.* $H_6(Mg, Fe)(Fe, Al)_2Si_2O_{11}$. Hexagonal.

Striped jasper. See Quartz.

Stroganovite. See Wernerite.

Strogonowit. See Wernerite.

Strohstein. See Carpholite.

Strombolo. See Mineral coal.

Stromeyerine. See Stromeyerite.

STROMEYERITE, *Shepard.* Ag_2S, Cu_2S. Orthorhombic. Argent et cuivre sulfuré, *Bournon*; argentiferous copper glance, *James.*; argentiferous sulphuret of copper, *Allan*; cuivre sulfuré argentifère; cupreous sulphuret of silver; silberkupferglanz, *Haus.*; stromeyerine, *Beud.*; sulphuret of copper, *Allan.*

Strömit. See Rhodochrosite.

Stromnite, Traill. 18.6 $SrCO_3$; 27.5 $BaSO_4$; 3.9 $CaCO_3$. A mixture.

Strontia carbonate. See Strontianite.

Strontia sulphate. See Celestite.

Strontian. See Celestite and Strontianite.

Strontian spar. See Strontianite.

Strontiane. See Celestite and Strontianite.

Strontiane carbonatée. See Strontianite.

Strontiane sulfatée. See Celestite.

STRONTIANITE, *Phillips.* $SrCO_3$. Orthorhombic. Diprismatic baryt, *James.*; emmonite, *Thomson*; emmonsite; kohlensaure strontionerde, *Klapr.*; kohlensaurer strontian, *Leonh.*; mineral from Strontian, *Hope*; peritomous halbaryte, *Mohs*; pyramido-prismatic baryt, *Man*; strontian, *Wern.*; strontian spar; strontiane, *Jameson*; strontaine carbonatée, *H.*; strontites.

BARYSTRONTIANITE; barytostrontianite.

CALCAREO CARBONATE OF STRONTIAN. *Thoms.*

Strontianocalcite. See Calcite.

Strontites. See Strontianite.

Strüverite. Near Chloritoid.

Struveite. See Struvite.

STRUVITE, *Ulex.* $NH_4MgPO_4+6\ H_2O$. Orthorhombic. Ammonia pnosphate; ammoniaque phosphatée; guanite, *Tesch.*; struveite.

St. Stephen's stones. See Quartz.

Studerite. See Tetrahedrite.

Stübelite, Breit. Near Klipsteinite.

STÜBENITE, *Darapsky.* $(Na_2, Mg)SO_4 Al_2(SO_4)_3+24\ H_2O$.

STÜTZITE, *Schrauf.* Ag_4Te. Monoclinic.

Stygmite. See Quartz.

Stylobat. See Gehlenite.

Stylotype. See Stylotypite.

STYLOTYPITE, *Dana.* $Cu_4Ag_4Sb_2Te S_6$. Orthorhombic. Cañutillo, *Chili*; stylotype, *von Kob.*

Stypterite. See Alunogen.

Stypticite. See Fibroferrite.

Subdelessite. See Delessite.

Suber montanum. See Amphibole and Xylotile.

Subfluate of cerium. See Fluocerine.

Subphosphate of alumine. See Wavellite.

Subsesquichromate de plomb. See Phœnicochroite.

Subsesquichromate of lead. See Phœnicochroite.

Substanz bituminose. See Rochlederite.

Subsulphate of alumina. See Aluminite.

Subsulphate of alumina and potash. See Aluminite.

Subterranean fungus. See Elaterite.

Succin. See Succinite.

Succin cristallisé. See Mellite.

Succin noir. See Mineral Coal.

SUCCINELLITE, *Dana.* $C_4H_6O_4$. Orthorhombic. Flos succini, *Liber.*; succinic acid; succinum vertitur partim in oleum sui coloris partim denique candidum quiddam et tenue quod similitudinem quandam gerit speciemque salis, *Agric.*

Succinic acid. See Succinellite.

Succinite. See Garnet.

SUCCINITE, *Breithaupt.* $C_{40}H_{64}O_4$. Massive. *Ηλεκτρον*, *Homer* (?); *Λυγκὔριον*, *Theoph.*; *Λυγγούριον*, *Diosc.*; amber, *James*; ambra gralla, *Petr.*; ambre; ambre jaune, *Deborn.*; bernstein, *Wern.*; börnstein; electrum; elektrum; fossil copal, *Phil.*; succin, *H.*; succinum; yellow resin, *Mohs.*

Succin transparent taèdrea.

Succinu

Succinum vertitur partim in oleum sui coloris partim denique candidum quiddam et tenue quod similitudinem quandam gerit speciemque salis. See Succinellite.

Suif de Loch Fyne. See Hatchettite.

Suif de montagne. See Scheererite.

Suif minéral. See Hatchettite.

Sulfatallophane. See Allophane.

Sulfate de plomb cuivreux. See Linarite.

Sulfate de soude. See Mirabilite.

Sulfate hydraté de nickel. See Morenosite.

Sulfate vert d'Urane. See Johannite.

Sulfato de niquel. See Morenosite.

Sulfatocarbonate de baryte. See Witherite.

Sulfo-arséniure de nickel. See Gersdorffite.

Sulfure de cuivre du Vésuve. See Covellite.

Sulfure de cuivre et d'antimoine. See Chalcostibite.

Sulfuricin. See Melanophlogite.

Sulphate de plomb cuivreux. See Linarite.

Sulphate of alumina and ammonia. See Tschermigite.

Sulphate of alumina, anhydrous. See Thenardite.

Sulphate of alumina and potash. See Kalinite.

Sulphate of ammonia. See Mascagnite.

Sulphate of baryta. See Barite.

Sulphate of barytes. See Barite.

Sulphate of cobalt. See Bieberite.

Sulphate of copper. See Chalcanthite.

Sulphate of iron. See Melanterite.

Sulphate of lead. See Anglesite.

Sulphate of lime. See Anhydrite and Gypsum.

Sulphate of magnesia. See Epsomite.

Sulphate of nickel. See Morenosite.

Sulphate of potash. See Aphthitalite and Misenite.

Sulphate of potash and ammonia. See Taylorite.

Sulphate of soda. See Mirabilite and Thenardite.

Sulphate of strontia. See Celestite.

Sulphate of uranium. See Johannite.

" of uranium and lime. See Ueslarite.

SULPHATITE, *Dana.* H_2SO_4. Acide sulfurique, *H.*; acide vitriolique; aëriform sulphuric acid, *James.*; huile de vitriol; native sulphuric acid; oil of vitriol; schwefelichtesäure; schwefeligesäure; schwefelsäure; schwefelsäure, unvollkommene; sulphuric acid.

Sulphato-carbonate of baryta. See Witherite.

Sulphato-carbonate of lead. See Lanarkite and Leadhillite.

Sulphato-chloride of copper. See Connellite.

Sulphato-tricarbonate of lead. See Leadhillite and Susannite.

Sulphide equals Sulphuret.

Sulphoselenide of zinc and mercury, del Castillo. Selenic sulphide of mercury and zinc.

Sulphur. See Marsh gas and Pyrite.

SULPHUR. S. Orthorhombic. Azufre nativo, *Herrg.*; brennestein; brimstone; fibrous sulphur; native sulphur; natürlicher schwefel; prismatic sulphur, *Mohs*; schwefel, *Wern.*; solpho, *Petr.*; soufre, *H.*

Sulphurated antimony. See Stibnite.

Sulphurated bismuth. See Bismuthinite.

Sulphurated nickel. See Niccolite.

Sulphurated silver ore. See Argentite.

Sulphurated uranite. See Uraninite.

Sulphureous hydrogen gas. See Sulphuretted hydrogen.

Sulphuret of antimony. See Stibnite.

Sulphuret of antimony and lead. See Boulangerite.

Sulphuret of arsenic. See Orpiment and Realgar.

Sulphuret of bismuth. See Bismuthinite.

Sulphuret of cadmium. See Greenockite.

Sulphuret of cobalt. See Jaipurite and Linnæite.

Sulphuret of copper. See Bornite, Chalcocite, Chalcopyrite, and Covellite.

Sulphuret of copper and antimony. See Chalcostibite.

Sulphuret of iron. See Marcasite, Pyrite, Pyrrhotite, and Troilite.

Sulphuret of lead. See Galenite.

Sulphuret of lead and antimony. See Galenite.

Sulphuret of lead and zinc. See Huascolite.

Sulphuret of manganese. See Alabandite and Hauerite.

Sulphuret of mercury. See Cinnabar.

Sulphuret of molybdena. See Molybdenite.

Sulphuret of nickel. See Millerite.

Sulphuret of silver. See Acanthite and Argentite.

Sulphuret of silver and antimony. See Freieslebenite.

Sulphuret of silver and copper. See Stromeyerite.

Sulphuret of tin. See Stannite.

Sulphuret of zinc. See Sphalerite.

Sulphuretted antimonial silver. See Pyrargyrite.

Sulphuretted oxide of antimony. See Kermesite.

SULPHURETTED HYDROGEN, *Jameson.* H_2S. Acide hydro-sulphurique; acide sulfhydrique; air hépatique; air puant; gaz hépatique; hepatische luft; hydrogène sulfuré; schwefeliges hydrogen gas, *Mohs*; schwefelleberluft; schwefeltes wasserstoffgas; schwefelwasserstoffgas, *Haus.*; sulphureous hydrogen gas.

Sulphur ferro et stanno saturatum. See Molybdenite.

Sulphur, selenic. See Selensulphur.

Sulphuric acid. See Sulphatite.

SULPHUROUS ACID. H_2SO_3. Acide sulfureux.

Sumpferz. See Limnite, Limonite, and Xanthosiderite.

Sundoikite. See Anorthite.

Sundvickite. See Anorthite.

Sundvigite. See Anorthite.

Sundvilkite. See Anorthite.

Sundwickit. See Anorthite.

Sun opal. See Opal.

Sunstone. See Oligoclase and Orthoclase.

Superoxide of lead. See Plattnerite.

Supersulphide of lead. See Galenite.

Supersulphuretted lead. See Galenite.

Surturbrand. See Mineral coal.

SUSANNITE, *Haidinger.* $H_{10}Pb_{18}C_9S_5O_{56}$. Hexagonal. Plomb blanc rhomboèdrique; sulphato-tricarbonate of lead pt., *Brooke*; suzannite, *Haid.*

SUSSEXITE, *Brush.* $(Mn, Mg)_3B_2O_5+H_2O$.

Suzannite. See Susannite.

SVANBERGITE, *Igelström.* $Al_6Ca(P_4O_{11})(SO_4)(OH)_2+5\ H_2O$. Hexagonal.

Svart cobalt-jord. See Wad.

Svartgylden. See Stephanite.

Svartstenart. See Gillingite.

Swaga. See Borax.

Swampy iron ore. See Limonite.

Swampy ore. See Limonite.

Swartblende. See Uraninite.

Swath. See Carbonic acid.

Swimming quartz. See Opal.

Swinestone. See Calcite.

Syepoorite. See Jaipurite.

Syhedrite. See Stilbite.

Sylvan. See Tellurium.

Sylvan ore, black. See Nagyagite.

Sylvan, gediegen. See Tellurium.

Sylvane. See Sylvanite and Tellurium.

Sylvane blanc. See Krennerite.

Sylvane graphique. See Sylvanite.

Sylvanite. See Tellurium.

SYLVANITE, *Necker.* $4AuTe_2$. $3AgTe_2$ Monoclinic. Antimonglanz, prismatischer, *Mohs*; aurotellurite, *Dana*; aurum bismuticum, *Schmeisser*; aurum graphicum, *von Born*; cottonerz; gold tellur; graphic gold, *Phil.*; graphic gold glance; graphic tellurium, *Aikin*; grautellur; or blanc; or blanc d'Offenbanya; or graphique; prismatic antimony glance, *Mohs*; prismatisches weisses golderz, *von Fichtel*; rhomböidal tellur; schrifterz, *Emark*; schrifttellur, *Haus.*; sylvane *Beud.*; sylvane graphique, *Brock.*; tellure auro-argentifère, *H.*; tellure gris; tellure natif auro-argentifère, *H.*; tellure natif aurifère et argentifère, *H.*

Sylvine. See Sylvite.

SYLVITE, *Dana.* KCl. Isometric. Chloride of potash; chloride of potassium; chlorkalium, *Germ.*; hoevelit, *Girard*; hövellit; kalisalzsaures; leopoldit, *Reichardt*; muriate of potash, *Smithson*; sal digestivus sylvii; schätzellit; [illegible] *Beud.*; sylvyne, *Beud.*

Sylvyne. See Sylvite.

SYMPLESITE, *Breit* [illegible] $8\ H_2O$. Mor

SYNADELPHITE. $(Al, Fe, Mn)_3As_2O_8 . 5\,Mn(OH)_2$. Monoclinic.

SYNGENITE, *von Zepharovich*. $K_2Ca(SO_4)_2+H_2O$. Monoclinic. Kalusite, *Rumpf*.

Syntagmatite. See Amphibole.

Sysserskit. See Iridosmine.

***Szaboite**, Koch.* $Fe'''_{22}Ca_2(SiO_3)_{35}$. Triclinic.

SZAIBELYITE, *Petersen*. $2Mg_3B_4O_{11}+3\,H_2O$. Boromagnesite.

Szaskaite. See Smithsonite.

SZMIKITE, *von Schröckinger*. $MnSO_4+H_2O$. Amorphous.

Tabasheer. Opaline concretion found in bamboo.

Tabergite. See Penninite and Ripidolite.

Table spar. See Wollastonite.

Tabular quartz. See Quartz.

Tabular spar. See Wollastonite.

***Tachyaphaltite**, Weibye.* Near Zircon. Tetragonal.

TACHYHYDRITE, *Rammelsberg*. $CaMg_2Cl_6+12\,H_2O$. Hexagonal. Magnesia chloride.

TACHYLYTE, *Breithaupt*. Al_2O_3, CaO, MgO, SiO_2, etc. Augit, schlackiger; hydrotachylyt; jaspoïd; slaggy augite, *Karst.*

***Tænite**, Reichenbach.* Fe_4Ni_3. Meteoric.

Tafelspath. See Wollastonite.

TAGILITE, *Hermann*. $Cu_3(OH)PO_4+3H\,O$. Monoclinic. Tagilith, *Herm.*

Tagilith. See Tagilite.

Takourave. See Amphibole, Jadeite and Zoisite.

TALC, *Haüy*. $H_2Mg_3(SiO_3)_4$. Monoclinic. *Μαγνῆτις λίθος, Theoph.* Colubrine; craie de Briançon; creta Brianzonia, *Wall.*; creta Hispanica, *Wall.*; creta Sartoria, *Wall.*; French chalk; glimmer, *Agric.*; hortonite; hydrosteatite; indurated talc; katzensilber; kreide, Spanische; lapis ollaris, *Wall.*; lapis scissilis; lavezzo; magnetis; ollite; ollaris pt.; pierre à pot; pierre à sculpture, *Broch.*; pierre de Baram; pierre de Côme; pierre de Cosne; pierre de porc; pierre ollaire; potstone; pseudolite; silberweiss; soapstone, *Nicol*; Spanish chalk; specstein; specksten, *Cronst.*; steatite, *Cronst.*; talc commun, *Broch.*; talc endurci, *Broch.*; talc écailleux, *La Métherie*; talc, fibrous; talck, *Agric.*; talc mica, *Mohs*; talc ollaire; talc steatite, *H.*; talcite, *Kirw.*; talcum, *Cronst.*; tälgsten; talk, *Wall.*; telgsten, *Wall.*; topfstein, *Wern.*; Venetian talc, *James.*

AGALMATOLITE.

Agalmatolite pt.; agalmatolithe pt.; figurestone; lardite; mother of diaspore; pagodite; pierre à magot; pierre de lard; talc graphique, *Haüy.*

PSEUDOMORPHOUS TALC.

PYRALLOLITE, *Nord.* Pitkarandite.

RENSSELÆRITE, *Emmons.*

VARGASITE, *Huot.* Wargasite.

Talc bleu. See Cyanite.

Talc chlorite. See Ripidolite.

Talc commun. See Talc.

Talc écailleux. See Talc.

Talc endurci. See Talc.

Talc, fibrous. See Talc.

Talc glaphique. See Biharite, Pyrophyllite, Pinite and Talc.

Talc granuleux. See Kaolinite and Muscovite.

Talc graphique. See Biharite, Pinite, Pyrophyllite and Talc.

Talc, hexagonal. See Ripidolite.

Talc hydraté. See Brucite.

Talc iron ore. See Menaccanite.

Talc lithomarge. See Andalusite.

Talc mica. See Biotite, Lepidolite, Muscovite, Prochlorite, Ripidolite and Talc.

Talc ollaire. See Talc.

Talc steatite. See Talc.

Talc, Venetian. See Talc.

Talc zographique. See Celadonite.

***Talc-apatite**, Herm.* Near Apatite, Talk apatit.

Talcite. See Margarodite and Talc.

***Talcoid**, Naumann.* $Mg_3Si_5O_{13}+H_2O$. Neutraler kieselsaurer hydrotalc, *Scheer.*; talkoid, *Naum.*

***Talcosite**, Ulrich.* $Al_{10}Si_9O_{33}+3H_2O$.

Talcum. See Talc.

Talcum carbonatum. See Magnesite.

Talcum nephriticum. See Amphibole and Jadeite.

Talgsten. See Prochlorite, Ripidolite, and Talc.

Talk. See Talc.

Talk phosphorsaurer. See Wagnerite.

Talkapatit. See Talc apatite.

Talkart. See Bastite.

Talkartiger diallag. See Bastite and Pyroxene.

Talkartiger hornblende. See Diaclasite,

Talkeisenerz. See Magnetite.

Talkeisenstein. See Magnesioferrite.

Talkerde alaun. See Pickeringite.

Talkerde von schuppigen theilen. See Kaolinite.

Talkhydrait. See Brucite.

Talkhydrat. See Brucite.

Talkoid. See Talcoid.

Talkspath. See Dolomite and Magnesite.

Talktriplite. See Triplite.

Talksteinmark. See Andalusite.

TALLINGITE, *Church.* $Cu_5Cl_3(OH)_8+4H_2O$. Copper chloride; copper oxychloride.

Tallow, mineral. See Hatchettite.

Tallow, mountain. See Hatchettite.

Taltalite. See Tourmaline.

Tamarite. See Chalcophyllite.

Tammela tantalite. See Tantalite.

Tammite, Crookes. W, Fe, Mn. Ferrotungsten, *Tamm.*

Tanah ampo. See Atacamite (?).

Tangiwai. See Jadeite.

Tangiwaite. See Jadeite.

Tankite. See Anorthite.

Tannenite. See Emplectite.

Tantalate de chaux. See Azorite.

Tantalate of iron. See Tantalite.

Tantale oxydé. See Columbite and Tantalite.

Tantale oxydé ferro-manganésifère. See Tantalite.

Tantale oxydé yttrifère. See Yttrotantalite.

Tantalic ochre. $Ta_2O_5+nH_2O$.

Tantalite. See Tapiolite.

TANTALITE, *Ekeberg.* (Fe, Mn)(Ta, Nb)$_2O_6$. Orthorhombic. Broddbotantalit, *Haus.*; cassiterotantalite, *Haus.*; columbate of iron, *Haus.*; ferro-tantalite, *Thom.*; Finbo tantalite, *Haus.*; harttantalerz, *Breit.*; ildefonsite, *Haid.*; iron tantalate; ixiolite; ixiolith, *A. E. Nord.*; kassiterotantal, *Haus.*; Kimito tantalite, *N. Nord.*; mangantantalite; prismatic tantalum ore, *Mohs*; siderotantal, *Haus.*; skogbölit, *A. E. Nord.*; Tammela tantalit, *N. Nord*; tantalate of iron; tantale oxydé, *Haüy.*; tantale oxydé ferro-manganésifère, *Haüy*; tantalite de Limoges; tantalite de Suède.

Tantalite de Bavière. See Columbite.

Tantalite de Limoges. See Tantalite.

Tantalite de Suède. See Tantalite.

Tapalpite, Monroy. Ag_2S. Bi_2Te_3. Tellurwismuthsilber, *Ramm.*

Tapiolite. See Chalcanthite (?).

TAPIOLITE, *Nordenskiöld.* $4\,FeTa_4O_6+FeNb_2O_6$. Tetragonal. Tantalite, *Arppe.*

Tarapacaite. See Tarapacite.

Tarapacite, Raimondi. K_2CrO_4 (?). Tarapacaite.

Targionite. See Galenite.

Tarnovicite. See Aragonite.

Tarnovizite. See Aragonite.

Tarnovitzite. See Aragonite.

Tarnowitzite. See Aragonite.

Tartre vitriolé. See Aphthitalite.

TASCINE, *Berz.* $AgSe_2$. Hexagonal (?).

TASMANITE, *Church.* $C_{20}H_{32}O_2S$. Resiniferous shale.

TAURISCITE, *Dana.* $FeSO_4+7\,H_2O$. Orthorhombic. Taurizit, *Volger.*

Taurizit. See Tauriscite.

Tautoclin. See Ankerite.

Tautoklin. See Ankerite.

Tautolit. See Allanite.

Tautolith. See Allanite.

TAVISTOCKITE, *Dana.* $Ca_5Al_2P_3O_{11}+3\,H_2O$. Crystalline. Hydrated calcium aluminic phosphate, *Church.*

TAYLORITE, *Dana.* $K_{10}(NH_4)_2(SO_4)_6$. Potash sulphate; sulphate of potash and ammonia, *Taylor.*

Tazuite, Domeyko. Bi_2O_3, As_2O_5, Sb_2O_5, etc. Amorphous.

Tchingtchang. See Lapis Lazuli.

Tecoretin. See Fichtelite.

Tecticite, Breit. $Fe_2(SO_4)_3+nH_2O$ (?). Orthorhombic. Braunsalz; graulite, *Glocker*; tectizite, *Breit.*; tekticit.

Tectizite. See Tecticite.

Tectum argenti. See Bismuth.

Tekoretin. See Fichtelite.

Tekticit. See Tecticite.

Telaspyrine. See Pyrite.

Télésie. See Corundum.

Telgsten. See Prochlorite, Ripidolite, Serpentine and Talc.

Tellurate of copper and lead, Knabe.

Tellurbismuth. See Tetradymite.

Tellurblei. See Altaite.

Tellurcadmium. Cd, Te.

Tellure aurifère et plombifère Nagyagite.

Tellure auro-argentifère. See Sylvanite.
Tellure auro-plombifère. See Nagyagite.
Tellure bismuthifère du Brésil. See Joseïte.
Tellure carbonaté. See Smithsonite.
Tellure d'argent. See Hessite.
Tellure d'argent chloruré. Cl, Te, Ag.
Tellure de plomb. See Altaite.
Tellure ferrifère et aurifère. See Sylvanite.
Tellure feuilleté. See Nagyagite.
Tellure gris. See Sylvanite.
Tellure jaune. See Tellurite.
Tellure natif aurifère et argentifère. See Sylvanite.
Tellure natif aurifère et plombifère. See Nagyagite.
Tellure natif auro-argentifère. See Sylvanite.
Tellure natif auro-ferrifère. See Tellurium.
Tellure natif auro-plombifère. See Nagyagite.
Tellure natif bismuthifère. See Tetradymite.
Tellure oxydé. See Tellurite.
Tellure plumbo-aurifère. See Nagyagite.
Tellure sélénié bismuthifère. See Tetradymite.
Tellureisen. See Iron.
Tellurgoldsilber. See Petzite.
Telluric bismuth. See Tetradymite.
Telluric ochre. See Tellurite.
Telluric oxide. See Tellurite.
Telluric silver. See Hessite.
Telluride of lead. See Altaite.
Tellurigesäure. See Tellurite.

TELLURITE, *Nicol.* TeO_3. Orthorhombic. Acide tellurique; tellure jaune; tellure oxydé; telluric ochre, *Dana*; telluric oxide; tellurigesäure, *Petz*; tellurocker; tellurocre; tellurous acid.

TELLURIUM. Te. Hexagonal. Aurum paradoxum vel problematicum, *Müller von Reichenstein*; gediegen silvan, *Wern.*; gediegen sylvan; gediegen tellur, *Klapr.*; lionite, *Berdell*; native sylvan, *James.*; native tellurium; or blanc dendritique, *Deborn*; silvane natif, *Broch.*; silvanite, *Haid.*; Spanish snuff; sylvan, *Wern.*; sylvanite, *Kirwan*; teilure natif auro-ferrifère, *H.*; white gold ore.

Tellurium, bismuthic. See Joseïte, Tetradymite, and Wehrlite.
Tellurium, black. See Nagyagite.
Tellurium, foliated. See Nagyagite.
Tellurium glance. See Nagyagite.
Tellurium, graphic. See Sylvanite.
Tellurium, white. See Krennerite.
Tellurium, yellow. See Sylvanite.
Tellurnickel. See Melonite.
Tellurocre. See Tellurite.
Tellurocker. See Tellurite.
Tellurous acid. See Tellurite.
Tellurpyrite. See Pyrite.
Tellursilber. See Hessite and Petzite.
Tellursilberblei. See Sylvanite.
Tellurure de plomb et d'or. See Nagyagite.
Tellururane. See Bismite.
Tellurwismuth. See Joseïte, Tetradymite, and Wehrlite.
Tellurwismuthglanz. See Bismuthinite.
Tellurwismuthsilber. See Tapalpite.
Tenasserime. See Graphite.
Tengerite, Dana. $Y_2(CO_3)_3+nH_2O$(?) Carbonyttrine, *Adam*; kolsyrad ytterjord, *Svan.*; ytterite; ytter-carbonate; ytterspath, *Germ.*; yttria spar.

TENNANTITE, *W. & R. Phillips.* 4 $Cu_2S.As_2S_3$. Isometric. Arsenfahlerz; arsenikalfahlerz; copper blende; dodecahedral dystome-glance, *Mohs*; erythroconite; fredricite; graukupfererz; gray copper; gray sulphuret of copper in dodecahedral crystals, *Sowerby*; kupferblende, *Breit.*; sandbergerit, *Breit.*; zinkfahlerz, *Breit.*

Tennspat. See Scheelite.
Tenorite. See Melaconite.

TENORITE, *Semmola.* CuO. Monoclinic. Cuivre oxidé noir; oxide of copper.

TEPHROITE, *Breithaupt.* $(Mn, Mg)_2SiO_4$. Orthorhombic. Anhydrous silicate of manganese; picrotephroite, *Paijkull.*

Tequezquite. Na_2CO_3, NaCl, etc.
Teratolite, Glocker. $(Al, Fe)_2O_3$, SiO_2, H_2O, etc. Amorphous. Eisensteinmark, *Breit.*; ferruginous lithomarge; hard lithomarge; teratolith; terra miraculosa Saxonia, *C. Richter*; wonder earth; wundererde.
Teratolith. See Teratolite.
Terenite, Emmons. Altered Wernerite near Pinite.

Ternärbleierz. See Leadhillite.
Terpezit. See Opal.
Terra calcarea acido vitriolo saturata. See Gypsum.
Terra calcarea phlogisto et acido vitrioli mixta. See Barite.
Terra Cimolita. See Cimolite.
Terra di Sienna. See Hypoxanthite.
Terra fullonum. See Smectite.
Terra miraculosa Saxonia. See Teratolite.
Terra ponderosa aërata. See Witherite.
Terra ponderosa vitriolata. See Barite.
Terra porcellanea. See Kaolinite.
Terra porcellanea particulis impalpabilibus mollis. See Saponite.
Terra Lemnia. See Sphragidite.
Terra Samia. See Kaolinite.
Terra sigillata. See Sphragidite.
Terra Tripolitana. See Opal.
Terra vitriolica. See Copperas group.
Terras. See Trass.
Terre à foulon. See Kaolinite and Smectite.
Terre à pipe. See Scoulerite.
Terre à porcelaine. See Kaolinite.
Terre bitumineuse feuilletée. See Dysodile.
Terre bolaire. See Hematite.
Terre de Cologne. See Mineral coal.
Terre d'Italie. See Hematite.
Terre de Lemnos. See Sphragidite.
Terre de Sienne. See Hypoxanthite.
Terre d'ombre. See Limonite.
Terre jaune. See Chalcopyrite.
Terre sigillée. See Sphragidite.
Terre verte. See Celadonite and Glauconite.
Terre verte de Tramont. See Glauconite.
Terre verte de Vérone. See Celadonite.
Terrou. See Marsh Gas.
TESCHEMACHERITE, *Dana.* NH_4HCO_3. Crystalline. Bicarbonate of ammonia, *Tesch.*
Tesselite. See Apophyllite.
Tesseralkies. See Skutterudite.
Tetalite. See Calcite.
Tetartine. See Albite.
Tetarto-prismatic feldspar. See Albite.
Tetarto-prismatic vitriol salt. See Chalcanth.
Tetradymite. See Wehrlite.

TETRADYMITE, *Haidinger.* $Bi_2(Te, S)_3$. Hexagonal. Bismuthic tellurium; bismuthotellurites pt., *Glock.*; bismuth telluré; bismuth tellurifère; bornine, *Beud.*; bornite, *Brooke*; ore of tellurium, *Esm.*; rhombohedral eutome glance; tellurbismuth, *Baloh*; tellure natif bismuthifère; tellure sélénié bismuthifère, *Fr.*; telluric bismuth, *Phil.*; tellurwismuth, *Berz.*
Tetraëdischer granat. See Helvite.
Tetraedrite. See Tetrahedrite.
Tetrahedral boracite. See Boracite.
Tetrahedral copper glance. See Tetrahedrite.
Tetrahedral garnet. See Helvite.
TETRAHEDRITE, *Dana.* $4Cu_2S.Sb_2S_3$. Isometric. Antimonfahlerz; argentum arsenico cupro et ferro mineralisatum, *Wall.*; argentum cinereum crystallis pyramidatis trigonis, *von Born*; argentum cupro et antimonio sulphure mineralisatum, *Cronst.*; arsenantimonfahlerz; arsenikfahlerz; clinoëdrit pt., *Breit.*; cuivre gris, *Haüy*; cuprum cinereum crystallis trigonis, *von Born*; fahlerz; fahlit, *Breit.*; fahlkupfererz, *Cronst.*; fahlore, *James.*; falerts, *Wall.*; falerz; grauertz, *Wall.*; graukupfererz; gray copper; gray copper ore, *Kirw.*; grey antimonial copper; kupferfahlerz; mine de cuivre antimonial, *Deborn*; mine de cuivre gris, *de Lisle*; minera argenti grisea, *Wall.*; panabase, *Beud.*; pyrites cupri griseus, *Cronst.*; schwarzerz pt.; tetraëdrit, *Haid.*; tetrahedral copper glance, *Moks.*

ARGENTIFEROUS.

FREIBERGITE, *Kenng.*: Argent blanc de Freiberg, *Brong*; argent gris; argentum rude album pt., *Agric.*; graugiltigerz pt.; light gray silver ore, *Kirw.*; mine blanche riche, *Broch.*; mina de plata blanca, *Herrg.*; mine d'argent gris, *Monges*; minera argenti alba, pt., *Wall.*; polytelite, *von Kob.*; schwarzgiltigerz pt.; silberfahlerz; weissgylden; weissgiltigerz pt.; white silver ore.
MALINOWSKITE, *Raimondi* kite.

TETRAHEDRITE—Continued.

BISMUTHIFEROUS.

ANNIVITE, *Brauns.*
RIONITE, *Brauns*: Riolite.
STUDERITE, *Fellenberg.*

MERCURIAL.

SCHWATZITE, *Kenng.*: Graugiltigerz; hermesite, *Breit.*; mercurialfahlerz; quecksilberfahlerz; schwarzerz pt., *Wern.*; schwartzite; spaniolite; spaniolith, *von Kob.*

NICKELIFEROUS.

FRIGIDITE, *d'Archiardi.*

PLATINIFEROUS.

PLATINIFEROUS GRAY COPPER, *Phil.*: Cuivre gris platinifère, *Lucas.*

Tetraklasit. See Wernerite.
Tetraphylin. See Triphylite.
Tétrasulfate de cuivre. See Brochantite.
Texalith. See Brucite.
Texasite. See Zaratite.
Teza. See Ulexite.
Thalackerite. See Anthopyllite.
Thalheimit. See Arsenopyrite.
Thalite. See Saponite.
Thalliferous pyrite. See Pyrite.
Thallite. See Epidote.
Tharandite. See Dolomite.
Thaumasite, Nordenskiöld. $CaSiO_3$, $CaSO_4$, $CaCO_3+14\ H_2O$. Mixture.
Thecoretine. See Fichtelite.
THENARDITE, *Casaseca.* Na_2SO_4. Orthorhombic. Anhydrous sulphate of alumina; anhydrous sulphate of soda; makite, *Adam*; natronsulfat; pyrotechnite, *Scacchi*; soda sulphate; sulphate of alumina.
Thermantide porcellanite. See Kaolinite.
Thermantide Tripoléenne. See Opal.
Thermonitrit. See Thermonatrite.
THERMONATRITE, *Haid.* $Na_2CO_3+H_2O$. Orthorhombic. *Νιτρον*; alkali orientale impurum terrestre; alkaliskt salt, *Wall.*; jordblandadt; natron, *Kirw.*; natron, kohlensaures; natürliches mineralisches alkali, *Wern.*; nitrum pt., *Vet.*; soude carbonatée prismatique; thermonitrit, *Haus.*
Thermophyllite. See Serpentine.
Thierschite, Liebig. $CaC_2O_4+H_2O$ (?). Oxalate of lime.
Thinolite, King. $CaCO_3$. Pseudomorphic.
Thiorsauite. See Anorthite.
Thiosaurite. See Anorthite.
Thjorsauite. See Anorthite.
Thomaite. See Siderite.
THOMSENOLITE, *Dana.* (Na, Ca)F_3, AlF_3+H_2O. Monoclinic. Dimetric pachnolite, *Hagemann*; hagemannite, *Shep.*; tetragonaler pachnolith.
THOMSONITE, *Brooke.* (Ca, Na_2)$Al_2(SiO_4)_2+2\frac{1}{2}\ H_2O$. Orthorhombic. Carphostilbite; comptonic kouphone spar; comptonite, *Brewster*; flabelliform kouphone spar, *Haid.*; karphostilbit, *von Walters.*; mesolite; mézoline; needlestone; needle zeolite pt. orthotomous kouphone spar, *Mohs*; tripoklas.
CHALILITE, *Thom.*: Chalilith; koodilite, *Dufr.*; scoulerite, *R. D. Thomson.*
FARÖELITE, *Heddle*: Faerölith; mesole, *Berz.*
LINTONITE, *Peckham* and *Hall.*
OZARKITE, *Shep.*
PICHROTHOMSONITE, *Men.* and *Bechi*: Pikrothomsonit.
Thoneisenerz. See Siderite.
Thoneisenstein. See Siderite.
Thonerde. See Corundum.
Thonerde baryt. $Ba_2Al_2O_5+5\ H_2O$. Triclinic.
Thonerde mit flussaüre. See Cryolite.
Thonerde, schwefelsaure. See Alumian, Aluminite, Alunite, and Alunogen.
Thonerde phosphat. See Wavellite.
Thonige hornsilber. See Cerargyrite.
THORITE, *Berz.* $ThSiO_4+2\ H_2O$. Tetragonal. Eucrasite, *Paijkull*; eukrasit; parathorite, *Shep.*
Thracius lapis. See Mineral coal.
Thraulite. See Gillingite.
Thraulith. See Gillingite.
Thrombolite. CuO, (As_2, Sb_2)O_5, H_2O. Thrombolith, *Breit.*; trombolite; phosphate of copper, *Plattner.*
Thrombolith. See Thrombolite.
Thsing-hoa-lio, Watts.
Thulite. See Zoisite.
Thumerstein. See Axinite.
Thumerstone. See Axinite.
Thumite. See Axinite.
Thunderstone. See Meteorites.

THURINGITE, *Breit.* $H_{18}(Fe, Mg)_8(Al, Fe)_8Si_6O_{41}$. Owenite, *Genth.*

TIEMANNITE. *Naumann.* HgSe. Massive. Ethiopsite; köhlerite, *Adam*; mercure séléniuré; quicksilver selenide; selenide of mercury; selenmercur, *Naum.*; selenquecksilber, *Marx.*

Tigerauge. See Crocidolite.

Tiger's eye. See Crocidolite.

Tile ore. See Cuprite.

Tilkerodite. See Clausthalite.

TIN. Sn. Tetragonal. Cassiteron, *Plin.*; diabolus metallorum, *Alchem.*; estaño, *Span.*; étain natif, *Fr.*; gediegen zinn, *Germ.*; jupiter, *Alchem.*; kasdir, *Arabic*; native tin; plumbum candidum, *Plin*; stagno, *Ital.*; stannum; zinn.

Tin hematites. See Cassiterite.

Tin ore. See Cassiterite.

Tin oxide. See Cassiterite.

Tin pyrites. See Stannite.

Tin sand. See Cassiterite.

Tin spar. See Cassiterite.

Tin stone. See Cassiterite.

Tin sulphuret. See Stannite.

Tin white cobalt. See Smaltite.

Tincal. See Borax.

Tincalcit. See Ulexite.

Tincalconite. See Borax.

Tinder ore. See Jamesonite.

Tinkal. See Borax.

Tinkalzit. See Ulexite.

Tireeite. See Tyreeite.

Tirolite. See Tyrolite.

Titanate de chaux. See Perofskite.

Titanate de magnésie. See Warwickite.

Titanate of iron. See Menaccanite.

Titanate of lime. See Perofskite.

Titane anatase. See Octahedrite.

Titane calcaréo-siliceux. See Titanite.

Titane ferrifère. See Rutile.

Titane oxydé. See Brookite, Octahedrite, and Rutile.

Titane oxydé chromifère. See Rutile.

Titane oxydé ferrifère. See Menaccanite.

Titane oxydé rouge. See Rutile.

Titane silicéo calcaire. See Titanite.

Titane silicéo calcaire canaliculé. See Titanite.

Titaneisen. See Iserite and Menaccanite.

Titaneisenerz. See Menaccanite.

Titaneisenstein. See Iserite and Menaccanite.

Titanic acid. See Brookite, Octahedrite, and Rutile.

Titanic iron. See Menaccanite.

Titaniferous cerite. See Cerite.

Titaniferous chrysolite, Damour. Massive; Peridot titanifére; titan olivine.

Titaniferous iron. See Iserite and Menaccanite.

Titaniferous iron sand. See Iserite.

Titaniferous magnetite. See Magnetite.

Titanioferrite. See Menaccanite.

Titanite. See Göthite and Rutile.

TITANITE, *Klaproth.* (Ca, Fe Mn) (Ti, Si)O_5. Monoclinic. Alshedite; arpidelite; aspidelite, *Weibye*; black titanite; braun mänakerz, *Wern*; brown ore, *Thom.*; castellite, *Breit.* channelled actinolite, *Saus.*; gelb mänakerz, *Wern.*; greenovite, *Dufr.*; hemi prismatic titanium, *Mohs*; lederite, *Shep.*; leucoxene; ligurite, *Viviani*; menac; menachine ore, *Wern.*; menakerz, *Wern.*; menas; nouvelle substance minérale, *Pictet*; pictite, *Dela.*; prismatic titanium ore, *Mohs*; rutilite, *James.*; schorl rayonnante en gouttière, *Saus.*; séméline, *de Bellevue*; silico-calcareous oxide of titanium; sphen, *Karst.*; sphène, *H.*; spintere; spinthère, *H.*; titane calcaire siliceux; titane silicéo-calcaire, *Daubenton*; titane silicéo-calcaire canaliculé; titanomorphite, *von Lesaulx.*

Titanium ore. See Pyrochlore.

Titankalk. See Rutile.

Titanmagneteisen. See Iserite and Menaccanite.

Titanolivine. See Titaniferous chrysolite.

Titanomorphite. See Titanite.

Titanschorl. See Rutile.

Titano-oxidé chromifère. See Rutile.

Tiza. See Ulexite.

Tjorsanite. See Anorthite.

Toadseye tin. See Cassiterite.

TOBERMORITE, *Heddle.* $3H_2Ca_4(SiO_3)_5+_{10}H_2O$. Massive.

TOCORNALITE, *Domeyko.* An Amorphous.

Tolfa diamonds. See Quartz

Tombazite. See Gersdorffite

Tomosite. See Rhodonite

Topacio. See Topaz.
Topas. See Topaz.
Topasius vulgaris. See Topaz.
Topaz. See Chrysolite.
TOPAZ. $Al_2Si(O, F_2)_5$. Orthorhombic. Aquamarine achter, *Mohs*; aquamarine topaz; Brazilian chrysolite; Brazilian ruby; Brazilian sapphire; Brézillienne, *Saus.*; chrysolithus pt., *Plin.*; chrysolithus veterum, *de Boot*; gouttes d'eau; Indian topaz; muscheliger feldspath, *Link*; nova mina; occidental topaz, *Kirw.*; prismatic topaz; Saxon topaz; silico fluatée alumineuse, *H.*; topacio, *Herrg.*; topas, *Wall.*; topasius vulgaris, *de Boot*; topaze de Brésil, *de Lisle*; topaze de Saxe, *de Lisle*; topaze brûlée; topaze orientale; topaze roulée; topazio, *Nap.*; topazius vera Saxonia, *Henckel*; topazosème, *Haüy*; waterdrops.

PYCNITE, *Haüy.* Beryl schorliforme, *Wern.*; foliated beryl; leucolite pt., *Dela.*; leucolite d'Altenberg; pyknit; schorl blanche en prismes striées, *Sage*; schorl blanchâtre, *Dela.*; schorlartiger beril, *Wern.*; schorlartiger topaz, *Bernhardi*; schorlite, *Klapr.*; shorlite, *Kirw.*; schorlous beryl; stangenspath, *Reuss*; stangenstein, *Wern.*; topaze bacillaire; weisser stangenschörl, *Wern.*

PYROPHYSALITE, *Hising.* and *Berz.* Phisalit; phisalith; physalit, *Wern.*; topaze prismatoïde, *H.*

Topaz, Bohemian. See Quartz.
Topaz, false. See Quartz.
Topaz, Occidental. See Quartz and Topaz.
Topaz, Oriental. See Corundum.
Topaz, smoky. See Quartz.
Topaze. See Topaz.
Topaze bacillaire. See Topaz.
Topaze brûlée. See Topaz.
Topaze de Bohème. See Quartz.
Topaze de Brésil. See Topaz.
Topaze de Saxe. See Topaz and Quartz.
Topaze d'Inde. See Quartz.
Topaze enfumée. See Quartz.
Topaze occidentale. See Quartz.
Topaze orientale. See Topaz.
Topaze roulée. See Topaz.
Topazine quartz. See Quartz.
Topazio. See Topaz.
Topazion. See Chrysolite.
Topazius. See Topaz and Zircon.
Topazius vera Saxonia. See Topaz.
Topazolite. See Garnet.
Topazolith. See Garnet.
Topazosème. See Topaz.
Topfstein. See Talc.
Torbane hill coal. See Torbanite.
Torbane mineral. See Torbanite.
TORBANITE, *Greg.* $C_{40}H_{68}O_2\frac{1}{2}$. Boghead cannel coal; boghead coal; bogheadkohle; boghead mineral; Torbane hill coal; Torbane mineral.

WOLLONGONGITE, *Silliman.* Kerosene shale.

Torberite. See Torbernite.
TORBERNITE, *Werner.* $Cu(UO_2)_2(PO_4)_2+8\,H_2O$. Tetragonal. Chalcolite, *Beud.*; chalkolite; chalkolith, *Wern.*; copper uranite, *Naum.*; cuivre corné, *Deborn*; cuprouranit, *Breit.*; green oxide of uranum; grüner glimmer; grünes uranerz; kupferuranglimmer, *Rose*; kupferuranit, *Germ.*; malachite mica; mica viridis cryst., *von Born*; micaceous uranitic ore, *Kirw.*; phosphate of uranium and copper, *Berz.*; phosphate of uranium containing phosphate of copper, *R. Phillips*; pyramidal euchlore mica, *Mohs*; spath pesant vert, *Sage*; torberit, *Wern.*; urane oxydé, *H.*; urane phosphaté; uranglimmer, *Wern.*; uranite pt., *Aikin*; uranites spathosus pt., *Klapr.*; urankalk durch kupfer gefürbt, *Klapr.*; uran-mica, *Jameson*; uranphyllit, *Breit.*
Torrelite. See Columbite.
Totaigite. Near Chondrodrite.
Touchstone. See Quartz.
Tourbe. See Mineral coal.
Tourbe papyracée. See Dysodile.
TOURMALINE, *Rinman.* Hexagonal.

I. Lithia tourmaline $12SiO_2$, $3B_2O_3$, $4H_2O$, $8Al_2O_3$, $(NaLi)_2O$.

II. Iron tourmaline $12SiO_2$, $3B_2O_3$, $4\,H_2O$, $7\,Al_2O_3$, $4\,FeO$, Na_2O.

III. Magnesia tourmaline $12\,SiO_2$, $3\,B_2O_3$, $4\,H_2O$, $5\,Al_2O_3$ $\frac{2}{3}$ MgO, $\frac{2}{3}\,Na_2O$.

Achroite, *Herm.*; aimant de Ceylon; aphrit, edler; aphrysita; aphryzite; aphrizite, *d'Andrada*; apyrit, *Haus.*; aschentrecker; aschenzieher; ashdrawer; basaltes crystallisatus, *von Born*; basalte transparent, *de Lisle*; borax basaltes, *Linn.*; borax electricus, *Linn.*; Brazilian emerald; Brazilian sapphire; chrysolite of

TOURMALINE—Continued.
Brazil; cobre negro estrellado de Tantal, *Domeyko*; cockle; common schorl, *James.*; corneus crystallisatus, *Wall.*; coronite; daourite, *Dela.*; daurite; electric schorl; electrischer schörl, *Wern.*; feijao; indicolite, *d'Andrada*; indigolith; luxullianite; lyncurium; microschörlite; noble tourmaline; peridot of Brazil; peridot of Ceylon; pierre de Ceylon; rhombohedral tourmaline; rother schörl, *Kirw.*; rubellite, *Kirw.*; saphir du Brésil; schirl pt., *Brück.*; schörl; schörl, edler, *Karst.*; shorl, *Kirw.*; schorl électrique, *Haüy.*; schorl noir, *Broch.*; schorl transparent rhomboïdal, *de Lisle*; schurl pt., *Erker*; schwarzer schörl; shirl; siberite, *l'Hermina*; skiörl pt., *Wall.*; skörl-crystall pt., *Cronst.*; sorlo nero, *Nap.*; stangen schörl; taltalite, *Domeyko*; tourmaline apyre, *H.*; tourmaline garnet, *Hill*; transparent basalt; turamali; turmalin, *Wall.*; zeolithus vitreus electricus, *Rinman*.

ZEUXITE, *Thom.*

Tourmaline apyre. See Tourmaline.

Tourmaline garnet. See Tourmaline.

Towanite. See Chalcopyrite.

Transparent basalt. See Tourmaline.

Trapezoidal kouphone spar. See Leucite.

Trappeisenerz. See Menaccanite.

Trappisches eisenerz. See Menaccanite.

Trass. Al_2O_3,SiO_2, H_2O. Terass.

Traubenblei. See Mimetite and Pyromorphite.

Traulit. See Gillingite.

TRAUTWINITE, *Goldsmith.* (Cr_2, Fe_2, $Ca_3)_4Si_3O_{18}$ (?). Hexagonal.

Traversellite. See Pyroxene.

Travertine. See Calcite.

Tremenheerite. See Graphite.

Tremolite. See Amphibole.

Trémolite de Norwège. See Wollastonite.

Tremolith. See Amphibole.

TRICHALCITE, *Hermann.* $Cu_3As_2O_8 + 5\ H_2O$.

Trichite, Zirkel. Microscopic crystals in volcanic rocks. Belonite, *Zirkel.*

Trichites. See Halotrichite.

Trichopyrit. See Millerite.

Triclasite. See Fahlunite.

TRIDYMITE, *vom Rath.* SiO_2. Triclinic.

Trihedral arseniate of copper. See Clinoclasite.

Triklasite. See Fahlunite.

Trinacrite. See Palagonite.

Trinkerite, Tschermak. C, H, S, O.

Triophthalmus. See Quarts.

Tripel. See Opal.

Tripelschiefer. See Opal.

Tripestone. See Anhydrite.

Triphane. See Spodumene.

Triphanite. See Analcite.

Triphyline. See Triphylite.

TRIPHYLITE, *Dana.* Li(Fe, Mn)PO_4. Orthorhombic. Eisenphosphat; Norwich mineral; perowskine; perowskyn, *Nord.*; phosphate of iron, *Phil.*; phosphate of manganese; tetraphylin, *Berz.*; triphyline, *Fuchs*; triphylline, *Dana.*

HETEROSITE, *Alluaud*: Heteposit, *Alluaud*; heterozite, *Alluaud.*

MELANCHLOR, *Fuchs.*

PSEUDOTRIPLITE, *Blum.*

Triphylline. See Triphylite.

Triple sulphuret. See Bournonite.

Triple sulphuret of lead, antimony, and copper. See Bournonite.

TRIPLITE, *Haussmann.* $(Fe, Mn)_3F, PO_4$. Monoclinic. Eisenapatit, *Fuchs*; eisenpecherz pt., *Wern.*; ferruginous phosphate of manganese; iron apatite; manganese phosphate; manganèse phosphaté, *Lucas*; manganèse phosphaté ferrifère, *H.*; phosphate natif de fer mélangé de manganèse, *Vauq.*; phosphate of iron and manganese, *Allan*; phosphate of manganese, *Phillips*; phosphormangan, *Karst.*; pitchy iron ore, *Phillips*; prismatic retin baryte, *Mohs*; retin baryte, *Mohs*; talk triplite; zwieselit, *Glock.*; zwiselite, *Breit.*

TRIPLOIDITE, *Brush & Dana.* $(Mn, Fe)_2(OH)PO_4$. Monoclinic.

Triploklas. See Thomsonite.

Tripoli. See Opal.

Tripoli slate. See Opal.

Tripolite. See Opal.

Trippel. See Opal.

Trippkeite, Damour & vom R As_2O_3. Tetragonal.

Trisilicate de char

Trisilicate de
nite.

Tritochorite, Frenzel. $(Pb, Cu, Zn)_3V_2O_8$.

TRITOMITE, *Weibye & Berlin.* Be, Ca, La, Ce, Di, Si, H_2O, etc. Isometric.

TRÖGERITE, *Weisbach.* $3\ U_2As_2O_8 + 12\ H_2O$. Monoclinic. Uranium arsenate.

TROILITE, *Haidinger.* $(Fe, Ni)_7S_8$. Massive. Fer sulfuré, *Haüy*; iron sulphide; iron sulphuret; magnetic iron pyrites pt.; magnetic pyrite; meteorkies; protosulphide of iron; pyrrhotite pt.; schwefeleisen, meteorisches; sulphide of iron of meteorites.

TROLLEITE, *Blomstrand.* $Al_4(PO_4)_3(OH)_3$. Monoclinic.

Trombolite. See Thrombolite.

TRONA, *Bagge.* $Na_4H_2(CO_3)_3 + 3\ H_2O$. Monoclinic. Borech; carbonate de soude; carbonate de natron, *La Métherie*; carbonate of soda, *Phil.*; hemi-prismatic natron salt, *Mohs*; natron, *Kirw.*; natrum von Tripole, *Klapr.*; natural soda, *James.*; nether, *Hebrew*; prismatic natron salt; radiated natron, *James.*; sesquicarbonate de soude; sesquicarbonate of soda; soda carbonate; soude carbonatée, *Haüy*; stralige natrum, *Klapr.*; urao, *Boussing.*

Troostite. See Willemite.

Trummerachat. See Quartz.

TSCHEFFKINITE. $FeO, (Ce, La, Di,)O, CaO, SiO_2, TiO_2$, etc. Amorphous (?). Minéral de Coromandel, *Beud.*; silicate de Coromandel; tschewkinite, *G. Rose*; uralorthite.

Tschermakite. See Albite.

TSCHERMIGITE, *von Kobell.* $(NH_4)_2Al_2(SO_4)_4 + 24\ H_2O$. Isometric. Alun ammoniacal; ammonalaun, *Germ.*; ammonalun, *Beud.*; ammonia alum; ammonia alum of the brown coal; ammonia bicarbonate; ammoniak, kohlensaures; ammoniak-alaun, *von Kob.*; ammoniaque carbonatée; sulphate of alumina and ammonia, *Phillips.*

Tschewkinite. See Tscheffkinite.

Tuësite. See Kaolinite.

Tufa. See Calcite.

Tufa, calcareous. See Calcite.

Tumite. See Axinite.

Tungspat. See Barite.

Tungstate de cuivre. See Cuprotungstite.

Tungstate de fer et de manganèse. See Wolframite.

Tungstate manganèsié. See Wolframite.

Tungstate of iron. See Wolframite.

Tungstate of iron and manganese. See Wolframite.

Tungstate of lead. See Stolzite.

Tungstate of lime. See Scheelite.

Tungstein. See Scheelite.

Tungstein blanc. See Scheelite.

Tungsten. See Scheelite.

Tungsten ochre. See Tungstite.

Tungsten von Bastnäs. See Cerite.

Tungstic acid. See Tungstite.

Tungstic acid and lime. See Scheelite.

Tungstic acid, iron, and manganese. See Wolframite.

Tungstic ochre. See Tungstite.

TUNGSTITE, *Dana.* WO_3. Earthy. Acide tungstique; oxide of tungsten; scheelsäure, *Germ.*; tungsten ochre, *Nicol*; tungstic acid; tungstic ochre, *Silliman*; wolfram blanc; wolfram ochre; wolframine, *Greg & Lettsom*; wolframocker; wolframsaüre; yellow oxide of tungsten, *Greg & Lettsom.*

Turamali. See Tourmaline.

Turchesa. See Turquois.

Turchine. See Turquois.

Turf. See Mineral coal.

TURGITE, *Hermann.* $H_2Fe_4O_7$. Eisenoxyd hydrat; hematite pt.; hydrate of iron; hydrohæmatit, *Breit.*; iron hydrous oxyde; oxide of iron; red ochre pt.

Türkis. See Turquois.

Turmalin. See Tourmaline.

Turnerite. See Monazite.

Turques. See Turquois.

Turquois. See Callainite.

TURQUOIS, *Tavernier.* $Al_4P_2O_{11} + 5\ H_2O$. Amorphous. Agaphite, *Fischer*; birousa; calaite, *Fischer*; calchite; callaina (?), *Plin.*; callais, *Plin.*; callaite, *Allan*; chalchihuitl, *Mex.*; Firuzegi, *Pers.*; hydrargyllite pt., *Haus.*; johnite, *Fischer*; kalait, *Germ.*; kallaite, *Germ.*; mineral turquois, *James.*; oriental turquois; orientalischer türkis, *Demetrius Agaphi*; Persian smaragdus, *Pliny*; smaragdus, *Wall.*; turchesa, *Ital.*; turchine, *Bocconi*; türkis pt.; turques, *Fabyan*; turquoise, *Fr.*; turquoise de vieille

TURQUOIS—Continued.
roche; turquoise orientale, *Fischer*; türkis pt., *Germ.*; uncleavable azure spar, *Mohs*.

Turquoise. See Turquois.

Turquoise blue marble. See Calcite.

Turquoise occidentale. See Odontolite.

Turquoise orientale. See Turquois.

Turquoise de nouvelle roche. See Odontolite.

Turquoise de vieille roche. See Turquois.

Tyreeite, Heddle. Insoluble residue of Tyree marble. Tireeite.

Tyrite. See Fergusonite.

Tyrolite. See Lazulite.

TYROLITE, *Dana.* $Cu_5(AsO_4)_2(OH)_2+7\ H_2O$. Orthorhombic. Copperfroth, *Dana*; cupreous calamine; kupaphrite, *Shep.*; kupferschaum, *Wern.*; prismatic euchlore mica, *Mohs*; tirolite, *Haid.*; zinc hydraté cuprifère, *Levy*.

TYSONITE, *Allen & Comstock.* $(Ce, Ta, Di)_2F_6$. Hexagonal.

Uddevallite. See Menaccanite.

Ueberschwefelblei. See Galenite.

Uigite. See Prehnite.

Uintahite. An asphaltic hydrocarbon.

ULEXITE, *Dana.* $NaCaB_5O_9+6\ H_2O$. Crystalline. Borate of lime, *Phil.*; boronatrocalcit, *Ulex*; borsaurerkalk; hemi-prismatic hal-baryte, *Mohs*; natroborocalcite; natronkalk-borat; teza; tincalcit; tinkalzit, *Kletzinsky*; tiza.

ULLMANNITE, *Fröbel.* $NiS_2.Ni(Sb, As)_2$. Isometric. Antimoine sulfuré nickelifère, *H.*; antimon-arsenik-nickelglanz, *Germ.*; antimonial nickel; antimon-nickelglanz, *Haus.*; bournonit nickelglanz; eutomous cobalt pyrites, *Mohs*; grey nickeliferous antimony; nickel antimoine sulfuré; nickel-antimonglanz; nickel, antimonio-arsenical; nickel bournonite; nickel gris; nickel stibine, *Dana*; nickeliferous gray antimony, *Allan*; nickelspiessglaserz, *Ull.*; nickelspiessglanzerz, *Haus.*

Ultramarine. See Lapis Lazuli.

Umber. See Limonite.

Umbra. See Limonite.

Unächter lasurstein. See Lazulite.

Uncleavable adiaphane spar. See Amphibole and Jadeite.

Uncleavable azure spar. See Turquois.

Uncleavable cerium ore. See Cerite.

Uncleavable iron ore. See Menaccanite.

Uncleavable manganese ore. See Pilomelane.

Uncleavable nephrite spar. See Amphibole and Jadeite.

Uncleavable retin-allophane. See Pitticite.

Uncleavable quartz. See Opal.

Uncleavable staphyline malachite. See Chrysocolla.

Uncleavable uranium ore. See Uraninite.

Unghwarite. See Chloropal.

Ungwarite. See Chloropal.

Uniaxial mica. See Biotite.

Unionite. See Zoisite.

Uraconise. See Uraconite.

URACONITE, *Dana.* $(U_2O_3)_2SO_3+14\ H_2O$. Amorphous. Ocre d'uran; uraconise, *Beud.*; uranochre, *Vogl*; uran ocker; uran ocre; uranic ochre *James*; uranium sulphate; zerrei blicher uranokker, *Karst.*

Uralite. See Pyroxene.

Uralorthite. See Allanite and Tscheffkinite.

Uranate de chaux. See Autunite.

Uranatemnite. See Uraninite.

Uranbloom. See Zippeite.

Uranblüthe. See Zippeite.

Uranchalzit. See Uranochalcite.

Urane micacé. See Autunite.

Urane noir. See Uranimite.

Urane oxydé. See Autunite and Torbernite.

Urane oxydé hydraté. See Zippeite.

Urane oxydé terreux. See Zippeite.

Urane oxydulé. See Uraninite.

Urane phosphaté. See Torbernite.

Urane sous-sulfaté. See Johannite.

Urane sulfaté. See Johannite.

Urane sulfuré brun. See Uraninite.

Uranelaine. See Pyropissite.

Uranerz. See Uraninite.

Uranglimmer. See Autunite and Torbernite.

Urangreen. See Uranochalcite.

Urangrün. See Uranochalcite.

Urangummi. See Gummite.

Uranin. See Uraninite.

URANINITE, *Dana.* [illegible]
Isometric. Ar[illegible]
Wall.; bl[illegible]
blend

URANINITE—Continued.
ran; oxide of uranium; pechblende, *Cronst.*; pecherz, *Karst.*; pechuran, *Germ.*; pitchblende, *Phil.*; pitch ore, *James.*; protoxide of uranium; pseudogalena nigra compacta, *de Born*; pseudogalena picea pt., *Wall.*; schwarzbeckerz, *Brück.*; schweruran; schweruranerz, *Breit.*; sulphuretted uranite, *Kirw.*; swart blende, *Cronst.*; uranatemnite, *Chap.*; urane noir, *Broch.*; urane oxydulé, *H.*; urane sulfuré brun, *Dela.*; uranerz, *Klapr.*; uranin, *Haid.*; uranium ore, *Allan*; uranium oxyd; **uranoxyd**, *Haus.*; uranpecherz, *Wern.*

CORACITE, *Le Conte.*

URANONIOBITE, *Herm.*: Kristallisirtes uranpecherz, *Scheerer.*

Uranisches gummi-erz. See Gummite.

Uranisches pittin-erz. See Eliasite.

Uranite. See Autunite and Torbernite.

Uranites spathosus. See Torbernite.

Uranium arsenate. See Trögerite and Walpurgite.

Uranium basic sulphate. See Zippeite.

Uranium carbonate. See Liebigite and Voglite.

Uranium ochre. See Zippeite.

Uranium ore. See Uraninite.

Uranium oxide. See Uraninite.

Uranium phosphate. See Autunite, Torbernite, and Uranocircite.

Uranium sulphate. See Johannite, Medjidite, Uraconite, Uranochalcite, Voglianite, and Zippeite.

Uranium vitriol. See Johannite.

Urankalk. See Autunite.

Urankalk carbonat. See Liebigite and Voglite.

Urankalk durch kupfer gefärbt. See Torbernite.

Urankalkkupfer carbonat. See Voglite.

Uranmica. See Autunite and Torbernite.

URANOCHALCITE, *Hermann.* UO, U_2O_3, CaO, SO_3, H_2O, etc. Crystalline. Uranchalzit; urangreen; urangrün, *Hartm.*; uranium sulphate; uranochalzit, *Breit.*

Uranochalzit. See Uranochalcite.

URANOCIRCITE, *Weisbach.* $BaU_2P_2O_{12}+8\ H_2O$. Orthorhombic. Autunite pt.; baryturanite; baryum uranit, uranium phosphate.

Uranochre. See Uraconite and Zippeite.

Uranocker. See Uraconite and Zippeite.

Uranocre. See Uraconite and Zippeite.

Uranoniobit. See Samarskite and Uraninite.

URANOPHANE, *Websky.* $Ca_3(U_2)_5(SiO_5)_6+18\ H_2O$. Orthorhombic (?).

Uranophyllite. See Torbernite.

URANOPILITE. $CaU_{16}Si_2O_{31}+25\ H_2O$.

URANOSPHÆRITE, *Weisbach.* $Bi_2U_4O_9+3\ H_2O$. Crystalline.

URANOSPINITE, *Weisbach.* $CaU_2As_2O_{12}$. Orthorhombic.

Uranotantal. See Samarskite.

URANOTHALLITE. $2CaCO_3,U(CO_3)_2+10\ H_2O$. Orthorhombic.

Uranothorite, Collier. ThO_2, UO_3, SiO_2, etc. Massive.

URANOTIL, *Boricky.* $CaU_6Si_3O_{16}+9\ H_2O$. Orthorhombic.

Uranoxyd. See Uraninite.

Uranpecherz. See Eliasite, Gummite, and Uraninite.

Uranphyllit. See Torbernite.

Uranvitriol. See Johannite.

Urao. See Trona.

Urdite. See Monazite.

Urizite. See Uruzite.

URPETHITE, *Dana.* C_nH_{2n}. Amorphous. Mineral wax; ozocerite, *Johnston.*

URUZITE, *Frenzel.* $Na_4Fe'''_2S_4O_{17}+8\ H_2O$. Orthorhombic. Urizite.

Urvölgyite. See Herrengrundite.

UTAHLITE. $Fe_6S_3O_{18}+4\ H_2O$. Crystalline.

Uwarowit. See Garnet.

VAALITE, *Maskelyne & Flight.* $H_4Mg_6(SiO_4)_4$. $(Al., Fe_3''')_2SiO_5$. Monoclinic.

Valaite, Helmhacker. A resin. Hexagonal. Walait.

Valencianite. See Orthoclase.

VALENTINITE, *Haidinger.* Sb_2O_3. Orthorhombic. Antimoine blanc, *Broch.*; antimoine muriatique, *La Métherie*; antimoine oxidé, *Haüy*; antimoine oxidé en prism; antimoine oxide fibreux aciculaire; antimonbaryt, *Mohs*; antimonblüthe, *von Leonh.*; antimonspath; antimonium spatosum album, *Hacquet*; antimonophyllite, *Breit.*; antimonoxyd; antimony baryte; antimony bloom; chaux d'antimoine exitèle; chaux d'antimoine natif, *Monges*; exitèle, *Beud.*; exi-

VALENTINITE—Continued.
telite, *Chap.*; muriated antimony, *Kirw.*; oxide of antimony, *Phil.*; oxide blanc d'antimoine; prismatic antimony baryte, *Mohs*; prismatic white antimony, *James.*; stibite; weiss-spiessglanzerz, *Klapr.*; weiss-spiessglaserz, *Wern.*; white antimonial ore, *Kirw.*; white antimony, *Phillips.*

Valerite, Blomstrand. $Cu_2Fe_2S_4$. $MgFe_2O_3+4H_2O$. Massive.

Vanadate from Lake Superior, Teschemacher.

Vanadate of lead and copper. See Chileite.

Vanadate of lime and copper. See Kalkvolborthite.

Vanadiate de cuivre. See Volborthite.

Vanadiate double de plomb et de cuivre. See Vanadinite.

Vanadiate of lead. See Vanadinite.

VANADIC OCHRE. *Dana.* V_2O_3. Vanadic acid, *Teschemacher.*

Vanadinaugit. See Pyroxene.

Vanadinbleierz. See Vanadinite.

Vanadinbleispatte. See Vanadinite.

VANADINITE, *von Kobell.* $Pb_5(VO_4)_3Cl$. Hexagonal. Braunbleierz of Zimapan, *early authors*; chromate de plomb brun, *Brong.*; plomb brun; plomb vanadiaté; plomb pardo, *Domeyko*; vanadate of lead; vanadiate double de plomb et de cuivre; vanadinbleierz, *G. Rose*; vanadinbleispath; vanadinsauresblei, *Germ.*; vanadinspath; vanadite.

Vanadinite, cupreous. See Chileite.

Vanadinkupferbleierz. See Chileite.

Vanadinmolybdänblei. See Wulfenite,

Vanadinsauresblei. See Vanadinite.

Vanadinsaureskupfer. See Volborthite.

Vanadinspath. See Vanadinite.

Vanadiolite, Hermann. $3R\,SiO_3$. $Ca_6V_6O_{20}$. Crystalline.

Vanadite. See Descloizite and Vanadinite.

Vanuxemite. See Calamine.

Vargasite. See Talc.

Variegated copper. See Bornite.

Variegated vitreous copper. See Chalcocite and Chalcopyrite.

Variolite. See Labradorite.

Variolyte. See Labradorite.

Variscite. See Callainite.

Varvacite. See Varvicite.

Varvicite, Phillips. $Mn_2O_7+H_2O$. Varvacite, *Thom.*

Vasite. See Allanite.

Vattenhaltigt manganoxid silikat. See Klipsteinite and Neotocite.

Vattenkies. See Pyrrhotite.

Vauquelin. See Vauquelinite.

VAUQUELINITE, *Berzelius.* $(Pb,Cu)_2O(CrO_4)_2$. Monoclinic. Chromate of lead and copper, *Phillips*; chromophosphate of lead and copper, *Jeln*; chromphosphorkupferbleispath; copper chromate; hemi-prismatic olivemalachite, *Mohs*; plomb chromaté, *Haüy*; plomb chromé; plomb chromé vert; vauquelin, *Berz.*

Velvet blue copper ore. See Cyanotrichite.

Velvet copper ore. See Cyanotrichite.

Velvet ore. See Cyanotrichite.

Vena ferri jecoris colore optima. See Siderite.

Venasquite, Damour. $(Fe, Mg)\,Al_2Si_7O_{18}+H_2O$.

Veneris crinis. See Rutile.

Venerite, Hunt. $CuO, Al_2O_3, Fe_2O_3, SiO_2, H_2O$.

Venetian talc. See Talc.

Venus. See Copper.

Venus' hair stone. See Amphibole and Rutile.

Venus' pencils. See Quartz.

Verde antico. See Serpentine.

Verde di cobre. See Malachite.

Verde di Corsica duro. See Amphibole.

Verde di Prato. See Serpentine.

Verde di Susa. See Serpentine.

Verhärteter aphrit. See Calcite.

Verhärtetes schwarzbraunsteinerz. See Psilomelane.

Verhärtetes schwarz-manganerz. See Psilomelane.

Vermeille. See Garnet.

Vermeille garnet. See Garnet.

Vermiculite. See Jefferisite.

VERMICULITE, *Webb.* $(R''_3, R'''_2)_2(SiO_4)_3+2H_2O$. Hexagonal. Lucasite; microvermiculite; philadelphite, *Lewis*; protovermiculite, *König.*

Vermilion. See Cinnabar.

Vermillon natif. See Cinnabar.

Vermontite. See Arsenopyrite.

Verona earth. See Celadonite

Veronite. See Celadonite

Verre de Moscovie. See Mica group and Muscovite.
Verrucite. See Mesolite.
Vert antique. See Serpentine.
Vert de cuivre. See Chrysocolla.
Vert de montagne. See Chrysocolla and Malachite.
Verwitterter uranvitrol. See Zippeite.
Vesbine, Scacchi. Vanadate of alumina (?.)
Vestan, Jenzsch. SiO_2. Triclinic.
Vesuvian. See Vesuvianite.
Vesuvian garnet. See Leucite.
Vesuvian salt. See Aphthitalite.
VESUVIANITE. $(Ca, Mg, Fe'')_8(Al, Fe''')_4(SiO_4)_7$. Tetragonal. Crisolito de vulcani, *Petr.*; egeran, *Wern.*; frugardit, *Nord.*; gahnit, *von Lobo*; gemme du Vésuve; gökumite, *Thom.*; heteromerit, *Herm.*; hyacinte, *de Lisle*; hyacinte du Vésuve, *de Lisle*; hyacinte volcanique, *Demeste*; hyacinthine, *Dela.*; hyacinth-krystalle *Pallas*; hyacinthus dictus octodecahedricus, *Cappeler*; idocrase, *H.*; idokras; Italian chrysolite; jefreinoffite; jefrienowite; jevreinoffite; jevreinowite; jewreinowit, *Nord.*; loboit, *Berz.*; magnesia idocrase; manganese idocrase; manganvesuvian; prismatic pyramidal garnet, *Mohs*; protherite; schorl vert du Vésuve, *Non*; vesuvian, *Wern.*; vésuvienne, *Broch.*; vulkanischer schörl, *Widenmann*; wiluite pt., *Sewergin*; xanthite, *Thom.*
CYPRINE, *Berz.* Idocrase cuprifère.
Vésuvienne. See Vesuvianite.
VESZELYITE, *Schrauf.* $Zn_3Cu_5P_2As_2O_{44}+18\,H_2O$. Triclinic.
Viandit. See Opal.
Victorite. See Eustatite.
Vierzonite. See Melinite.
Vietinghofite. See Samarskite.
Vignite. See Magnetite.
Villarsite, Dufrenoy. Hydrated chrysolite. Orthorhombic. Serpentine aus d. Malenkerthal, *Fellenberg.*
Villemite. See Willemite.
Vilnite. See Wollastonite.
Violan, Breithaupt. $CaMg(Na, K)_4(Mg, Fe)Al_2(SiO_3)_6$. Monoclinic.
Violet farbigen zeolith. See Lepidolite.
Viride montanum. See Chrysocolla and Malachite.
Viridite, Vogelsang. A collective name [illegible] transparent
Viridul. See Quartz.
Virisite. See Pyroxene.
Virum. See Diamond.
Visimutum sulphure mineralisatum. See Bismuthinite.
Vitreous copper. See Chalcocite.
Vitreous silver. See Argentite.
Vitriol. See Chalcanthite.
Vitriol blanc. See Goslarite.
Vitriol bleierz. See Anglesite.
Vitriol, blue. See Chalcanthite.
Vitrol, cobalt. See Bieberite.
Vitriol de cuivre. See Chalcanthite.
Vitriol de Goslar. See Goslarite.
Vitriol de magnésie. See Epsomite.
Vitriol de plomb. See Anglesite.
Vitriol de plomb natif. See Anglesite.
Vitriol gelb. See Jarosite.
Vitriol, green. See Melanterite.
Vitriol, grün. See Melanterite.
Vitriol, lead. See Anglesite.
Vitriol, martial. See Melanterite.
Vitriol, natürlicher. See Melanterite.
Vitriol, nickel. See Morenosite.
Vitriol ochre. See Glockerite and Pittieite.
Vitriol ocker. See Glockerite and Pitticite.
Vitriol of copper. See Chalcanthite.
Vitriol of iron. See Melanterite.
Vitriol, red. See Bieberite.
Vitriol, red iron. See Botryogen.
Vitriol rose. See bieberite.
Vitriol rouge. See Botryogen.
Vitriol salt. See Melanterite.
Vitriol vert. See Melanterite.
Vitriol, white. See Goslarite.
Vitriol, zinc. See Goslarite.
Vitriolite. See Pisanite and Melanterite.
Vitriolo de marte. See Melanterite.
Vitriolo de Rome. See Chalcanthite.
Vitriolum. See Copperas Group and Melanterite.
Vitriolum album. See Copperas Group and Goslarite.
Vitriolum cupri. See Copperas Group and Chalcanthite.
Vitriolum Cypri. See Copperas Group and Chalcanthite.
Vitriolum ferri. See Copperas Group and Melanterite.
Vitriolum ferrum and niccolum contiens. See Morenosite.
Vitriolum martis. See Melanterite and Copperas Group.

Vitriolum veneris. See Chalcanthite and Copperas Group.

Vitriolum viride. See Melanterite and Copperas Group.

Vitriolum zinci album nativum. See Goslarite.

Vitrum muscoviticum. See Mica Group and Muscovite.

Vitrum ruthenitieum. See Mica Group.

Vivianite. See Lazulite.

VIVIANITE, *Werner.* $Fe_3P_2O_8+8\,H_2O$. Monoclinic. Anglarite, *Berth.*; blaueisenerde, *Wern.*; blaueisenerz, *Wern.*; bleu de Prusse natif, *de Lisle*; bleu martial cristallisé, *Sage*; bloa järnjord, *Cronst.*; blue iron; blue iron earth, *James.*; blue ironstone; blue martial earth, *Kirw.*; cæruleum Berolinense nativum, *von Born*; calx martis phlogisto juncta etc., *Cronst.*; eisenblau, *Germ.*; eisenglimmer, *Mohs*; eisenphyllit, *Breit.*; fer azuré, *Haüy*; fer phosphaté, *Fr.*; fer phosphaté au maximum, *Dela.*; fer phosphaté bleu; fer terreux bleu, *Broch.*; glaukosiderite, *Glock.*; iron phosphate; mullicite, *Thom.*; native Prussian blue; natürliche Berlinerblau, *Klapr.*; naturligit Berlinerblätt, *Cronst.*; ocre martiale bleue, *de Lisle*; phosphate of iron, *Phil.*; phosphorsaurer eisen, *Klapr.*; prismatic iron mica, *Mohs*; prussiate de fer natif, *Deborn*; schorl bleu de Sibérie, *Macquart.*

Voelknerite. See Hydrotalcite.

VOGLIANITE, *Dana.* $(U''_3, U'''_2)_2SO_6+2\,H_2O$. Earthy. Basic sulphate of uranium, *Vogl*; uranium sulphate.

VOGLITE, *Haidinger.* $U_4Ca_7Cu_3(CO_3)_{18}+24\,H_2O$. Crystalline. Carbonate of uranium; uranium carbonate; urankalk carbonat, *Vogl*; urankalkkupfer carbonat, *Vogl.*

VOIGTITE, *Schmid.* $R''_3R'''_2(SiO_4)_3+3\,H_2O$. Crystalline. Eukampite, *Kenngott*; rastolyte, *Shep.*

VOLBORTHITE, *Hess.* $(Cu, Ca)_4V_2O_9+H_2O$. Hexagonal (?). Cuivre vanadaté; knauffite; vanadate of copper; vanadiate de cuivre; vanadinsaures kupfer.

Volcanic ash. See Pozzuolana.

Volcanic glass. See Orthoclase.

Volcanic sand. See Pozzuolana.

Volcanic schorl. See Pyroxene.

Volcanite. See Pyroxene and Selenium.

Volfram. See Wolframite.

VOLGERITE, *Dana.* $Sb_2O_5+5\,H_2O$. Massive. Antimoine oxidé hydraté; antimonial ochre, *Phil.*; antimonocker, *Leonh.*; antimony ochre, *Jame.*; cumengite, *Dewey*; hydrous antimonic acid; spiessglasokker, *Wern.*

Volnyn. See Barite.

VOLTAITE, *Scacchi.* $Fe''Fe'''_2(SO_4)_4+15\,H_2O$. Isometric.

Voltzine. See Voltzite.

VOLTZITE, *Rammelsberg.* Zn_5OS_4. Hepatic blende; leberblende, *Breit.*; oxysulfuré de zinc; oxysulphide of zinc; oxysulphuret of zinc; voltzine *Fournet*; volzit, *Ramm.*

Voraulite. See Lazulite.

Vorhauserite. See Serpentine.

Vosgite, Delesse. Hydrated Labradorite.

Vosgite, Delesse. Hydrated Labradorite.

Vulkanischer schörl. See Vesuvianite.

Vulkanisches eisenglas. See Fayalite.

Vulpinite. See Anhydrite.

Wachskohle. See Mineral coal.

Wachsopal. See Opal.

Wachsstein. See Saponite.

Wackenrodite. See Wad.

Wad. See Graphite.

WAD, *Allan.* $2\,MnO_2+H_2O$. Amorphous. Black wad pt., *Kirw.*; bog manganese; brauner eisenrahm, *Wern.*; earthy manganese; earthy ochre of manganese, *Kirw.*; groroilite, *Berth.*; groroilith; magnesia frisbilis terriformis, *Cronst.*; manganschaum, *Karst.*; Ouatite, *Huot*; oxyde noir de manganèse; reissacherite, *Haid.*; schaumartiger wad graphit, *Phil.*; schwarz braunsteinerz, *Karst.*; stalactitic manganese.

COBALTIFEROUS.

ASBOLITE: Aithalite; asbolan, *Breit.*; black cobalt; black cobalt ochre, *Breit.*; black oxide of cobalt; cacochlor; cobalt argentifère; cobalt ochre; cobalt oxydé noir, *H.*; cobalt terreux noir; cobaltide, *Leymerie*; cobaltic manganese; cobaltum nigrum, *Agric.*; earthy cobalt, *Phil.*; erdkobalt *Karst.*; hornecobalt; kakochlor, *Breit.*; kobaltmanganerz kobaltmulm, *Cronst.*; kobalt minera cobaltum terra

WAD—Continued.
Wall.; ochra cobaltum nigra, *Cronst.*; ochreous wad; ochry wad; oxide of cobalt; peroxyde de cobalt; russkobalt; schlackenkobalt; schwarzer erdko- balt, *Wern.*; schwarzerdkobold; silberkobalt; svartkoboltjord, *Wall.*

CUPRIFEROUS.

LAMPADITE, *Huot*: Cupreous manganese, *Phil.*; cupreous oxide of manganese; kupfermangan, *Lampadius*; kupfermanganerz, *Breit*; magnésie hydraté cuprifère; pelokonite, *Richter.*

PLUMBIFEROUS.

WACKENRODITE, *Adam.*

Weerthite. See Cyanite.
Wagit. See Calamine.

WAGNERITE, *Fuchs.* Mg_2PO_4F. Monoclinic. Fluophosphate of magnesia; hemi-prismatic fluor haloid, *Mohs*; kjerulfine, *von Kob.*; magnesia fluophosphate; magnésie phosphatée, *Fr.*; phosphorsaurer talk, *Fuchs*; pleuroclase; pleuroklas, *Breit.*

Walait. See Valaite.

WALCHOWITE, *Haidinger.* $C_{40}H_{44}O_{34}$. Bergpech pt., *Estner*; retinit von Walchow, *Schrötter.*

Waldheimite, Ramm. Near Amphibole. Amphibol ähnliches mineral von Waldheim, *A. Knop.*

Walkerde. See Smectite.
Walkerite. See Pectolite.
Walklera. See Saponite.
Walkthon. See Smectite.
Wallerian. See Diastatite.
Wall saltpetre. See Nitrocalcite.
Walmstedtite. See Magnesite.
Walpurgin. See Walpurgite.

WALPURGITE, *Weisbach.* $(BiO)_{10}UO_2{}''HO)_4(AsO_4)+8H_2O$. Triclinic. Uranium arsenate walpurgin.

Waltherite, Vogl. Bismuth carbonate of [illegible]

Walmerite, von Xanthophyllite.
Wandesite, von Andesite.

WAPPLERITE, *Firnad.* $H_4(Ca, Mg)$ [illegible] H_2O. Vienna.

Wargasite, von Vesle.
Warwickenite, von Warwickite.
Wavellite, von Wavellite.

WARWICKITE, *Shepard.* $Mg_4(B, Fe, Al)_6Ti_2O_{15}$. Monoclinic. Enceladite, *Hunt*; fluorure de titane et de fer; titanate de magnésie; warvicite.

Waschgold. See Gold.
Washingtonite, See Menaccanite.
Wasite, J. F. Bahr. Altered allanite (?). Crystalline.
Wasser. See Water.
Wasserblei. See Molybdenite.
Wasserbleisilber. See Wehrlite.
Wasserbley. See Molybdenite.
Wasserfreier scolezite. See Ersbyite.
Wasserglimmer. See Penninite.
Wasserhaltige nickel-oxide-magnesia. See Cabrerite.
Wasserhaltiges kohlensaures mangan. See Wiserite.
Wasserkies. See Arsenopyrite and Marcasite.
Wasserkies, dichter. See Marcasite.
Wasserkies, strahliger. See Marcasite.
Wassersapphir. See Iolite.
Wasserspieskobold. See Smaltite.
Wasserstoffgas. See Hydrogen.

WATER. H_2O. Hexagonal. Brine; dew; eau; glace; hagel; hagelkörner; ice; mist; rain; reif; schnee; snow; wasser; weich wasser, *Mohs.*

Water drops. See Topaz.
Water opal. See Opal.
Water sapphire. See Corundum.
Wattevillite. See Clinophæite.
Wavellite. See Gibbsite.

WAVELLITE, *Babbington.* $Al_4(PO_4)_4(OH)_6+9H_2O$. Orthorhombic. Alumine hydro-phosphatée, *Haüy*; alumine phosphatée, *Fr.*; cæruleolactin, *Petersen*; cæruleolactite; columnar diaspore; devonite, *Thom.*; hydrargillite, *Davy*; hydrate d'alumine, *Klapr.*; kapnicite, *Keung.*; lasionit, *Fuchs*; lationite; lazionite; phosphate of alumina; pyroelectric wavellite; strahliger hydrargillit, *Haus.*; subphosphate of alumine; thonerdephosphat.

Wax coal. See Mineral coal.
Wax opal. See Opal.
Waxen vein. See Calcite.
Wehrlyite, Brauns. Altered Serpentine.
Weberite. See Aluminite.
Wehrlite. See Ilvaite.

WEHRLITE, *Huot.* $Bi(Te,S)$. Hexagonal. Argent molybdique, *Debern*; bismuthic tellurium: mirror-glance,

WEHRLITE—Continued.
Breit.; molybdänsilber, *Wern.*; molybdena silver; molybdic silver; phyllinglance; phyllinglanz; pilsenit, *Kenng.*; spiegelglanz, *Breit.*; tellurwismuth, *Berz.*; tetradymite, wasserbleisilber, *Wern.*; wehrlite, *Huot*; wismuthglanz, *Klapr.*; wismuthspiegel, *Weiss.*

Weichbraunstein. See Pyrolusite.
Weicheisenkies. See Marcasite.
Weichmangan. See Pyrolusite.
Weichmanganerz. See Pyrolusite.
Weichwasser. See Water.
Weisgylden. See Tetrahedrite.
Weissbleierz. See Cerussite.
Weisse granaten. See Leucite.
Weisse granat-förmige schörl-crystallen. See Leucite.
Weisserkies. See Marcasite.
Weisserspeiskobalt. See Cobaltite and Smaltite.
Weisserspeisskobold. See Cobaltite and Smaltite.
Weisserz. See Arsenopyrite and Marcasite.
Weisses nickelerz. See Gersdoffite.
Weissgolderz. See Krennerite.
Weissgiltigerz, lichtes. See Polytelite.
Weissgültigerz. See Stephanite and Tetrahedrite.
Weissian. See Scolecite.
Weissigite. See Orthoclase.
Weissite. See Fahlunite.
Weisskupfer. See Domeykite and Marcasite.
Weisskupfererz. See Domeykite and Marcasite.
Weissnickelerz. See Smaltite.
Weissnickelkies. See Rammelsbergite and Smaltite.
Weissspiessglanzerz. See Cervantite and Valentinite.
Weissspiessglaserz. See Valentinite.
Weissstein. See Albite.
Weissylvanerz. See Krennerite.
Weisstellur. See Krennerite.
Weltauge. See Opal.
Wernerite. See Ekebergite and Paranthite.
Wernerite, muscheliger. See Nephelite.
WERNERITE, *d'Andrada*. $(Ca,Na_2)Al_2(SiO_4)_2$. Tetragonal. Arcticite, *Wern.*; arctizite; dipyre du Mexique; elainspath; fuscit, *Schum.*; pierre en tige; pyramidal felspar, *Mohs*; rapidolite; rapidolith, *Abid.*; saussurite; scapolite, *d'Andrada*; scapolith; skapolith, *Wern.*; tetraklasite.
NUTTALLITE, *Brooke*: Chelmsfordite, *J. F. & S. L. Dana.*
STROGANOVITE: Strogonowit, *Hess.*
WERTHEMANITE, *Raimondi*. $Al_2SO_6+3\,H_2O$. Massive.
Wesentlicher bestandtheil salzsaures eisenoxyd. See Pyrosmalite.
Westanite, C. W. Blomstrand. Near Fibrolite. Crystalline.
WHEELERITE, *Loew*. $n(C_5H_6O)$.
Wheel-ore. See Bournonite.
WHEWELLITE, *Brooke & Miller*. $CaC_2O_4+H_2O$. Monoclinic. Chaux oxalatée; kalk, oxalsaures; oxalate of lime, *Brooke*; oxacalcite, *Shep.*
White antimonial ore. See Valentinite.
White antimony. See Valentinite.
White arsenic. See Arsenolite.
White augite. See Pyroxene.
White bisulphuret of iron. See Marcasite.
White blende. See Sphalerite.
White cobalt. See Cobaltite.
White cobalt ore. See Smaltite.
White coccolite. See Pyroxene.
White copper. See Domeykite and Marcasite.
White copper ore. See Domeykite and Marcasite.
White copperas. See Coquimbite and Goslarite.
White garnet. See Leucite.
White garnet of Vesuvius. See Leucite.
White gold ore. See Tellurium.
White grossular. See Garnet.
White hyacinth of Somma. See Meionite.
White iron pyrites. See Marcasite.
White jade. See Amphibole.
White lead ore. See Cerussite.
White lead spar. See Cerussite.
White malacolite. See Pyroxene.
White manganese. See Rhodonite (?).
White mundic. See Arsenopyrite.
White nickel. See Rammelsberg
Smaltite.
White nickel pyrites.
bergite.
White olivine.
White pyrites.

White silver. See Polytelite and Stephanite.
White silver ore. See Tetrahedrite.
White, Spanish. See Calcite.
White stone. See Quartz.
White sylvan ore. See Krennerite.
White tellurium. See Krennerite.
White topaz. See Quartz.
White vitriol. See Goslarite.
WHITNEYITE, *Genth.* Cu_9As. Crystalline. Darwinite, *Forbes.*
Wichtine. See Wichtisite.
WICHTISITE, *Hausmann.* (Fe″, Mg, Ca, $Na_2)_3Fe'''_2(SiO_3)_6$. Wichtine; wichtyne, *Laurent.*
Wichtyne. See Wichtisite.
Wiesenerz. See Limnite, Limonite, and Xanthosiderite.
Wild lead. See Sphalerite.
Wilhelmite. See Willemite.
WILLCOXITE, *Genth.* 3 (Mg, Na_2, $K_2)_3$ SiO_4. 2 (Al, $Fe''')_4SiO_8$ + 2 H_2O.
WILLEMITE, *Levy.* Zn_2SiO_4. Hexagonal. Anhydrous silicate of zinc; brachytypous zinc baryte, *Mohs*; ferruginous silicate of manganese, *Thom.*; hebetine, *Breit.*; silicate of zinc, *Vanuxem & Keating*; siliceous oxide of zinc, *Vanuxem & Keating*; troostite, *Shep.*; villemite; wilhelmite; williamite, *Nicol*; williamsite.
Williamite. See Willemite.
Williamsite. See Serpentine and Willemite.
Williamsonite. See Serpentine.
Wilsonite, Hunt. Altered Wernerite near Pinite. Pinitartiger skapolit, *Schum.*
Wiluite. See Garnet and Vesuvianite.
Winklerite, Breithaupt. Co_4NiO_9+$2H_2O$. Amorphous.
Winkworthite, How. Mixture of Howlite and Gypsum (?).
Wiserin. See Octahedrite and Xenotime.
WISERITE, *Haidinger.* $MnCO_3$+H_2O. wasserhaltiges kohlensaures mangan, *Wiser.*
Wismutglanz. See Bismuthinite.
Wismuth. See Bismuth.
Wismuth, gediegen. See Bismuth.
Wismuthbleierz. See Schapbachite.
Wismuthblende. See Eulytite.
Wismuthblüthe. See Bismite.
Wismuthglanz. See Bismuthinite and Wehrlite.
Wismuthgold. See Maldonite.
Wismuthisches blendeerz. See Eulytite.
Wismuthkobalterz. See Smaltite.
Wismuthkobaltkies. See Smaltite.
Wismuthkupfererz. See Emplectite and Wittichenite.
Wismuthnickelkies. See Grünauite.
Wismuthochre. See Bismite.
Wismuthokker. See Bismite.
Wismuthoxyd-kohlensaures. See Bismutite.
Wismuthsilber. See Chilenite and Schapbachite.
Wismuthsilbererz. See Chilenite and Schapbachite.
Wismuthspath. See Bismutite.
Wismuthspiegel. See Wehrlite.
Wismutischer arsenglanz. See Arsenic.
Witerite. See Witherite.
Withamite. See Epidote.
Withérine. See Witherite.
WITHERITE, *Werner.* $BaCO_3$. Orthorhombic. Aërated barytes, *Watt*; barolite, *Kirw.*; baryte aérée, *Deborn.*; baryte carbonatée, *H.*; carbonate of baryta; carbonate of barytes, *Phil.*; diprismatic halbaryt, *Mohs.*; kohlensaurer baryt, *Germ.*; pierre contre les rats; rhombohedral baryte; spath pesant aéré, sulfato-carbonate de baryte; sulphato-carbonate of baryta, *Thom.*; terra ponderosa aërata, *Withering*; witherine, *Dufr.*; witerite, *Nap.*
WITTICHENITE, *Kenngott.* Cu_3BiS_3. Orthorhombic. Bismuth sulfuré cuprifère, *Fr.*; cupreous bismuth, *Phil.*; cupriferous sulphuret of bismuth; kupferwismutherz, *Selb*; wismuthkupfererz, *Leonh.*; wittichite, *von Kob.*
Wittichite. See Wittichenite.
Wittingite. See Neotocite.
Wocheinite. See Beauxite.
Wodankies. See Gersdorffite.
WÖHLERITE, *Scheerer.* (Ca, Na_2, Fe)$_{13}$ $Nb_2(Si, Zr)_{12}O_{42}$. Monoclinic.
Woerdhite. See Fibrolite.
Woerthite. See Fibrolite.
Wölchite. See Bournonite.
Wölknerit. See Hydrotalcite.
Wohan. See Smithsonite.
Wolchonskite. See Wolchonskoite.
WOLCHONSKOITE, *Kämmerer.* (Cr, Al, Fe)$_8Si_9O_{30}$+$18H_2O$. Amorphous. Selwynite, *Ulrich*; wolchonskite; wolkonskoit.

WOLFACHITE, *Sandberger*. Ni(As,Sb) S. Orthorhombic.

Wolfram. See Wolframite.

Wolfram blanc. See Scheelite.

Wolframbleierz. See Stolzite.

Wolframochre. See Tungstite.

Wolframocker. See Tungstite.

Wolframsäure. See Tungstite.

Wolframine. See Tungstite and Wolframite.

WOLFRAMITE, *Breithaupt*. (Mn,Fe) WO_4. Monoclinic. Brown gossan of Cornwall; eisenscheel; ferro-wolframite; ferruginous oxide of tungsten; ferrum arsenico mineralisatum, *Wall.*; iron tungstate; lapis niger ex quo conflatur candidum plumbum, *Agric.*; lupi spuma, *Agric.*; magnesia parva cum portione martis et jovis mixta, *Cronst.*; manganwolframit; prismatic scheele ore; prismatic scheelerz, *Mohs*; prismatic scheelium ore; scheelate of iron and manganese; scheel ore; sheelin ferruginé, *H.*; scheelium ore; spuma lupi, *Wall.*; tungstate de fer et de manganèse; tungstate ferrugineux, *Dela*; tungstate manganèsié, *Deborn*; tungstate of iron and manganese, tungstic acid, iron and manganese, *d'Elhuyar*; volfram, *Wall.*; wolfram, *d'Elhuyar*; wolframine, *Greg.*

Wolfsbergite. See Chalcostibite and Jamesonite.

Wolkenachat. See Quartz.

Wolkonskoit. See Wolchonskoite.

Wollastonite. See Pectolite.

WOLLASTONITE, *Haüy*. $CaSiO_3$. Monoclinic. Asbestargtiger okenit, *Rink*; bisilicate de chaux; chelmsfordite; gjellbekite; grammite; lime silicate; prismatic augite spar *Mohs*; schaalstein, *Wern.*; spath en table, *Haüy*; table spar; tabular spar, *Phil.*; tafelspath, *Stütz*; trémolite de Norwège; vilnite, *Horodeki*; zurlite, *Raimondi*; zurlonite.

Wollastonite fibreuse. See Pectolite(?).

Wollastonite de Thomson. See Pectolite.

Wollongongite. See Torbanite.

Wolnyn. See Barite.

Wonder earth. See Teratolite.

Wood coal. See Mineral coal.

Wood iron ore. See Limonite.

Wood opal. See Opal.

Wood, petrified. See Quartz.

Wood stone. See Opal and Quartz.

Wood tin. See Cassiterite.

WOODWARDITE, *Church*. $Cu_4Al_2(OH)_{24}(SO_4)_3+6\ H_2O$.

Würfelerz. See Pharmacosiderite.

Würfelgyps. See Anhydrite.

Würfelspath. See Anhydrite.

Würfelstein. See Boracite.

Würfelzeolith. See Analcite and Chabazite.

Würfliger muriazit. See Anhydrite.

WULFENITE, *Haid.* $PbMoO_4$. Tetragonal. Bleigelb, *Haus.*; bleimolybdat, *Germ.*; carinthite; chromowulfenit; gelbbleierz, *Wern.*; gelbes bleierz; Kärntherischer bleispath, *von Jacquin*; lead molybdate; melinose, *Beud.*; molybdänblei; molybdänbleispath; molybdate of lead; molybdenated lead ore, *Kirw.*; plomb jaune, *de Lisle*; plomb molybdaté, *H.*; plomo amarillo, *Herrg.*; plumbum spatosum flavo-rubrum, ex Annaberg *von Born*; pyramidal lead baryte, *Mohs*; yellow lead ore, *James.*; yellow lead spar, *Kirw.*; yellow molybdenated lead ore, *Kirwan*.

Wundererde. See Teratolite.

Wundersalz. See Mirabilite.

WURTZITE. *Friedel*. ZnS. Hexagonal. Erythrozincite; spianterit, *Breit.*; strahlenblende; zinc sulphide; zinc sulphuret.

Xanthiosite, *Adam*. $Ni_3As_2O_8$. Arsenate of nickel; nickel arsenate; nickelerz, *Bergm*; nickel tribasic arsenate; yellow arsenate of silver.

Xanthitan. See Titanite.

Xanthite. See Vesuvianite.

Xanthoarsenite. (Mn, Fe, Mg, Ca)$_5$(OH)$_4$ $As_2O_8+3\ H_2O$.

Xanthocone. See Xanthoconite.

XANTHOCONITE, *Dana*. Ag_3AsS_3. Hexagonal. Xanthocone, *Dana*; xanthokon, *Breit.*

Xanthokon. See Xanthoconite.

Xantholite. See Garnet and Staurolite.

XANTHOPHYLLITE, *G.*, $Mg_5(Al, Fe)_{14}Si_4O_{\ldots}$

Waluewite, *J*

Xanthopyr

Xanth

Xe

XANTHOSIDERITE. *Schmid.* $H_4Fe_2O_5$. Bog iron ore pt.; bog ore pt.; gelbeisenstein, *Haus.*; hydrous oxide of iron pt.; morass ore; morassy iron ore; morasterz pt., *Wern.*; raseneisenerz pt.; raseneisenstein pt.; sumpferz pt.; wiesenerz pt.; yellow ochre pt.

Xenolite, Nordenskiöld. Al_2SiO_5. Xenolithe.

Xenolithe. See Xenolite.

XENOTIME, *Beudant.* $(Y, Ce)_5P_2O_8$. Tetragonal. Castelnaudite, *Damour*; phosphate of yttria, *Phillips*; phosphorsaure yttererde; phosphorsyrad ytterjord, *Berz.* phosphyttria, *Berz.*; wiserin, *Kenng.*; yttria phosphatée, *Necker*; ytterspath, *Glock.*; yttria hydro-phosphatée; yttria spar.

Xenotlit. See Xonaltite.

Xerasite.

XONALTITE, *Ramm* $4CaSiO_3+H_2O$. Xenotlit; xonotlit

Xonotlit. See Xonaltite.

Xylite. See Xylotile

Xylithe. See Xylotile.

Xylochlore. See Apophyllite.

Xylokryptit. See Scheererite.

Xyloretin. See Xyloretinite.

XYLORETINITE, *Dana.* $C_{40}H_{64}O_4$. Orthorhombic. Hartin, *Schrötter*; psathyrin, *Glock.*; psathyrit, *Glock.*; xyloretin, *Forchh.*

Xylotile, Glocker. Near Paligorskite. $R''_6R'''_{10}Si_{24}O_{69}+18\ H_2O$. Asbeste ligniforme, *H.*; bergholz, *Sterzing*; bois de montagne, *Brochant*; holzasbest; ligniforme asbestos; mountain wood; rock wood; xylite, *Herm.*; xylithe.

Yabicoja. From Tarapaca, in Peru.

Yanolite. See Axinite.

Yanolithe. See Axinite.

Yellow arsenate of nickel. See Xanthiosite.

Yellow clay iron stone. See Limonite.

Yellow copperas. See Copiapite.

Yellow copper ore. See Chalcopyrite.

Yellow copper pyrites. See Chalcopyrite.

Yellow earth. See Chalcopyrite.

Yellow gold glance. See Krennerite.

Yellow iron ochre. See Chalcopyrite.

Yellow lead ore. See Wulfenite.

Yellow lead spar. See Wulfenite.

Yellow mineral resin. See Succinite.

Yellow molybdenated lead ore. See Wulfenite.

Yellow ochre. See Limonite, Melinite, and Xanthosiderite.

Yellow ore. See Chalcopyrite.

Yellow orpiment. See Orpiment.

Yellow oxide of tungsten. See Tungstite.

Yellow quartz. See Quartz.

Yellow sulphuret of arsenic. See Orpiment.

Yellow sulphuret of copper. See Chalcopyrite.

Yellow sylvan ore. See Krennerite.

Yellow tellurium. See Krennerite.

Yenite. See Ilvaite.

Yeso. See Gypsum.

Yeso-fibroso. See Gypsum.

Youngite, Hannay. Mixture containing Pb, Zn, Mn, S, etc.

You-stone. See Amphibole and Jadeite.

Ypolèime. See Pseudomalachite

Ytterbite. See Gadolinite.

Yttercarbonate. See Tengerite.

Yttererde, phosphorsaure. See Xenotime.

Yttererde-silicat. See Yttria silicate.

Ytterflussspath. See Yttrocerite.

Yttergranat. See Garnet.

Ytterspath. See Tengerite, Xenotime, and Yttrotantalite.

Yttertantal. See Yttrotantalite.

Yttertantalite. See Yttrotantalite.

Ytterite. See Tengerite.

Yttria fluate. See Yttrocerite.

Yttria garnet. See Garnet.

Yttria hydro phosphatée. See Xenotime.

Yttria ochre.

Yttria phosphate. See Xenotime.

Yttria silicate. From Bahia. Silicate of yttria, *Damour.*

Yttria spar. See Tengerite and Xenotime.

Yttrious oxide of columbium. See Yttrotantalite.

Yttrite. See Gadolinite.

Yttrocalcit. See Yttrocerite.

Yttrocererit. See Yttrocerite.

YTTROCERITE, *Berzelius and Gahn.* $5\ CaF_2$. (Y, Er, Ce) F_3+H_3O. Cerium oxydé yttrifère, *Beud.*; double fluate of cerium and yttria, *Phillips*; fluate of cerium and yttria, *Berz.*; flussyttro-

YTTROCERITE—Continued.
calcit; pyr nidal cerium baryte, *Mohs*; ytterflussspath; yttria fluatée; yttrocalcit, *Glock.*; yttrocererit, *Leonh.*

Yttrocolumbite. See Yttrotantalite.

Yttrogummite. Decomposed Cleveite.

Yttroilmenit. See Samarskite and Yttrotantalite.

Yttrotantale. See Yttrotantalite.

Yttrotantalit, brauner. See Fergusonite.

YTTROTANTALITE, *Dana.* (Y, Er, Ce, Ca, Fe)(Ta, Cb)$_2$O$_7$. Orthorhombic. Tantale oxydé yttrifère, *H.*; ytterspath; yttertantal, *Karst.*; yttertantalite; yttrious oxide of columbium; yttro-columbite, *Dana*; yttroilmenit, *Herm.*; yttrotantal, *Ekeberg.*

Yttrotantalite, yellow. See Fergusonite.

Yttrotitanite. See Keilhauite.

Yu. See Amphibole and Jadeite.

Zähes erdpech. See Asphaltum.

Zahab. See Gold.

Zala. See Borax.

Zamtite. See Zaratite.

Zaratita. See Zaratite.

ZARATITE, *Casares.* $NiCO_3.2Ni(OH)_2+4H_2O$. Amorphous. Carbonato hidratado de niquel, *Casares*; emerald nickel, *Silliman*; hydrate of nickel, *Silliman*; nickel carbonate; nickel émeraude; nickel hydrocarbonate; nickeloxydhydrat; nickel smaragd; ochre de nickel, *Broch.*; pennite; texasite, *Kenng.*; zamtit, zaratita, *Casares*; zavalite, *Bristow.*

Zavalite. See Zaratite.

Zeagonite. See Gismondite.

Zeasite. See Opal.

Zeilanite. See Spinel.

Zellkies. See Marcasite.

Zeolite. See Natrolite and Stilbite.

Zéolite. See Zéolithe.

Zeolite, cubic. See Analcite and Chabazite.

Zeolite, efflorescing. See Laumontite.

Zeolite, feather. See Natrolite.

Zeolite, fibrous. See Natrolite.

Zeolite, foliated. See Stilbite and Heulandite.

Zeolite, mealy. See Laumontite.

Zeolite, needle. See Natrolite.

Zeolite of Brisgau. See Calamine.

Zeolite, pyramidal. See Apophyllite.

Zeolite, radiated. See Stilbite.

Zeolites albus fibrosus, capillaris, etc. See Natrolite.

Zeolites bloa. See Lapis Lazuli.

Zeolites cryst., crystalli ad centrum tendentes. See Stilbite.

Zeolites crystallisatus, prismaticus, capillaris. See Natrolite.

Zeolites facie Selenitica lamellaris. See Stilbite.

Zeolith von Hellesta. See Apophyllite.

Zéolithe bleue. See Lapis Lazuli.

Zéolithe calcaire. See Pectolite.

Zéolithe commune. See Stilbite.

Zéolithe cubique. See Analcite and Chabazite.

Zéolithe d'Ædelfors. See Laumontite.

Zéolithe de Borkhult. See Anorthite.

Zéolithe d'Hellesta. See Apophyllite.

Zéolithe de Salpach. See Faujasite.

Zéolithe de Suède. See Spodumene.

Zéolithe de 24 facettes. See Analcite.

Zéolithe dure. See Analcite.

Zéolithe efflorescente. See Laumontite.

Zéolithe en aiguilles. See Natrolite.

Zéolithe farineuse. See Laumontite.

Zéolithe feuilletée. See Stilbite.

Zéolithe fibreuse. See Natrolite.

Zéolithe lamelleuse. See Heulandite.

Zéolithe leucitique. See Analcite.

Zéolithe nacrée. See Stilbite.

Zéolithe noire. See Gadolinite.

Zéolithe radiée. See Natrolite.

Zéolithe rayonnée. See Stilbite.

Zéolithe rouge de Tyrol. See Fassaite.

Zéolithe rouge d'Upsal. See Laumontite.

Zéolithe tenace. See Okenite.

Zéolithe verdâtre. See Prehnite.

Zeolithus albus cubicus Islandiæ. See Chabazite.

Zeolithus cæruleus. See Lapis Lazuli.

Zeolithus lamellaris major. See Apophyllite.

Zeolithus vitreus electricus. See Tourmaline.

ZEPHAROVICHITE, *Boricky.* $Al_2P_2O_8+5H_2O$. Orthorhombic.

Zerreiblicher uranokker. See Uraconite.

Zeugite. See Metabrushite.

ZEUNERITE, *Weisbach.* $CuU_2As_2O_{12}+8H_2O$. Tetragonal.

Zeuxite. See Tourmaline.

Zeylanite. See Spinel.

Zianite. See Cyanite.

Ziegelerz. See Cuprite.

ZIETRISIKITE, *Dana.* C_nH_{2n}. Cire fossile de Moldavie, *Magnus*; ozocerite; ozockerite, *Malaguti.*

Zigueline. See Cuprite.

Zillerthite. See Amphibole.

ZIMAPANITE, *Del Rio.* VCl_2. Hexagonal.

ZINC. Zn. Hexagonal. Calaëm, *Libavius*; zink; zinken, *Paracelsus.*

Zinc arsenate. See Adamite and Köttigite.

Zinc azurite. See Azurite.

Zinc blende. See Sphalerite.

Zinc bloom. See Hydrozincite.

Zinc bromide. See Bromide of Zinc.

Zinc calamine. See Calamine.

Zinc carbonate. See Hydrozincite and Smithsonite.

Zinc carbonaté. See Smithsonite.

Zinc carbonaté hydreux. See Hydrozincite.

Zinc glance. See Calamine.

Zinc hydraté. See Hydrozincite.

Zinc hydraté cuprifère. See Tyrolite.

Zinc hydro-carbonaté. See Hydrozincite.

Zinc iodide. See Iodide of Zinc.

Zinc-iron-manganese gahnite. See Gahnite.

Zinc iron spar. See Smithsonite.

Zinc lead spar. See Cerussite.

Zinc ore, red. See Zincite.

Zinc oxide. See Zincite.

Zinc oxyde. See Zincite.

Zinc oxydé. See Calamine and Zincite.

Zinc oxydé ferrifere. See Zincite.

Zinc oxydé rouge. See Zincite.

Zinc oxydé silicifére. See Calamine and Willemite.

Zinc oxysulphuret. See Voltzite.

Zinc phosphate. See Hopeite.

Zinc selenide. Zn Se (?). Culebrite; coulobrasine; séléniure de zinc; selenzink.

Zinc silicate. See Calamine and Willemite.

Zinc spar. See Smithsonite.

Zinc spinel. See Gahnite.

Zinc staurolite. See Staurolite.

Zinc sulfuré. See Sphalerite.

Zinc sulphaté. See Goslarite.

Zinc sulphate. See Goslarite and Zincosite.

Zinc sulphide. See Sphalerite and Wurtzite.

Zinc sulphuret. See Sphalerite and Wurtzite.

Zinc vitriol. See Goslarite.

ZINCITE, *Dana.* ZnO. Hexagonal. Brucite, *Dufr.*; chalcozincite; hydrocinit; oxide of zinc; oxyde de zinc; oxyde rouge de zinc; oxyde zincique; prismatic zinc ore, *Mohs*; red oxide of zinc, *Bruce*; red zinc ore, *James.*; red zinc oxide; rothzinkerz; spartaite, *B. & M.*; sterlingite, *Alger*; stirlingite; zinc oxide; zinc oxidé ferrifère; zinc oxidé rouge; zinconine zinconise, *Beud.*; zinkit, *Haid.*; zink oxyd, *Leonh.*

Zinckenite. See Zinkenite.

Zinconine. See Hydrozincite and Zincite.

Zinconise. See Hydrozincite and Zincite.

Zincosite. See Zinkosite.

Zincum acido aëro mineralisatum. See Smithsonite.

Zincum cum Fe, S, mineralisatum. See Sphalerite.

Zincum naturale calciforme. See Calamine.

Zincum spatosum cinereum electricum. See Calamine.

Zincum spatosum flavescens drusicum. See Calamine.

Zincum S, As, et Fe, mineralisatum. See Sphalerite.

Zink. See Zinc.

Zinkaluminit. $Zn_6Al_6S_2O_{21}+18\ H_2O$.

Zinkarseniat. See Köttigite.

Zinkazurite. $ZnSO_4$, $CuCO_3$, etc. Crystalline.

Zinkbaryte. See Calamine.

Zinkbleispath. See Cerussite.

Zinkblende. See Sphalerite.

Zinkblüthe. See Hydrozincite.

Zinkeisenspath. See Smithsonite.

Zinken. See Zinc.

ZINKENITE, *G. Rose.* PbS. Sb_2S_3. Orthorhombic. Antimoine sulfuré plombifère; bleiantimonglanz; zinckenite.

Zinkit. See Zincite.

Zinkosite, Breithaupt. $ZnSO_4$. Orthorhombic. Anhydrous sulphate of zinc; zincosite; zinc sulphate.

Zinkfahlerz. See Tennantite.

Zinkglas. See Calamine.

Zinkglaserz. See Calamine.

Zinkkieselerz. See Calamine.
Zinkoxyd. See Zincite.
Zinkphyllit. See Hopeite.
Zinkspath. See Smithsonite.
Zinkspinell. See Gahnite.
Zinkvitriol. See Goslarite.
Zinn. See Tin.
Zinn, gediegen. See Tin.
Zinn, geschwefeltes. See Stannite.
Zinnerz. See Cassiterite.
Zinnkies. See Stannite.
Zinnober. See Cinnabar.
Zinnstein. See Cassiterite.
Zinnwaldite. See Lepidolite.

ZIPPEITE, *Dana.* $(U_2O_3)_3(SO_3)_2 + nH_2O$. Crystalline. Basisches schwefelsaures uranoxyd, *John*; carbonate of uranium; danberite, *Adam*; uranbloom, *Zippe*; uranblüthe, *Zippe*; urane oxydé terreux, *H.*; urane oxydé hydraté; uranium basic sulphate; uranium ochre, *Nicol*; uranium sulphate; uranochre, *Vogl*; uranocker; uranocre; verwitterter uranvitriol, *John*.

Zircarbite, Shepard. Yellowish brown mineral of Rockport, Mass.

ZIRCON, *Werner.* $ZrSiO_4$. Tetragonal. Λυγκίριον, *Theoph.* Adelpholite (?), *Nord.*; beccarite; calyptolite, *Shep.*; Ceylon zircon; chrysolithos (?) pt., *Pliny*; crateritis (?), *Plin.*; cyrtolite; diamant brut, *de Lisle*; engelhardit, *Hofm.*; false diamond; grenat à prisme quadrilatère, *Faujas*; hyacinte, *Faujas*; hyacinte pt., *de Lisle*; hyacinth; hyacinth la bella; hyazinth; jacinta la bella; jargon, *Cronst.*; jargon de Ceylan, *de Lisle*; jargon de diamant; jargoon; jasgon, *Wall.*; kaliptolite; lapis lyncurius; ligure; lyncurion; lyncurium, *Theoph.*; melichrysos (?), *Pliny*; mock diamond; ostranite, *Breit.*; pyramidal zircon, *Mohs*; silicate of zirconia, *Klapr.*; topazius pt., *Wall.*; zirconite, *Schum.*; zirkon, *Wern.*

Zirconite. See Zircon.
Zirkon. See Zircon.
Zirlite, Pichler. Near Gibbsite.
Zöblitzer serpentine. See Serpentine.
Zöblitzite. See Serpentine.
Zölestin. See Celestite.

ZOISITE, *Werner.* $H_2Ca_4(Al_2)_3Si_6O_{26}$. Orthorhombic. Calcareous epidote; dyskolite; épidote pt., *H.*; épidote calcaire; illuderite, *Leonh.*; lime epidote; saualpit, *von Zois*; saualpitite; thulite, *Brooke*; unionite, *Silliman*.

SAUSSURITE (lime soda zoisite). Bitterstein, *Hopfner*; feldspathe tenace, *H.*; jade; jade de Saussure, *H.*; jade fenace, *H.*; lehmanite, *Dela.*; lemanite, *Dufr.*; magnésithe, *Hopfner*; nephrite pt., *Wern.*; prismatic nephrite spar, *Haid.*; Schweizerische jade; takourave.

Zoned agate. See Quartz.
Zonochlorite. See Prehnite.
Zootinsalz. See Soda Nitre.

ZORGITE, *Brooke & Miller.* $Cu_{18}Pb_2Se_{11}$. Massive. Copper and lead selenide; glasbachite, *Adam*; raphaosmit, *von Kob.*; selenbleikupfer, *H. Rose*; selenblei mit selenkupfer, *H. Rose*; selen-copper-lead; selenide of copper and lead; séléniure de plomb et de cuivre; seleniuret of lead and copper; selenkupferblei selensilberkupferblei.

Zorodon, Bonjean.
Zuisang. See Lapis Lazuli.
Zundererz. See Jamesonite.

ZUNYITE. $(Fe, K_2, Na_2, H_2, Li_2)_9Al_6Si_3O_{17}$. Isometric.

Zurlite. See Melilite and Wollastonite.
Zurlonite. See Wollastonite.
Zweiaxiger glimmer. See Muscovite.
Zwieselite. See Triplite.
Zwitter from Altenberg.
Zygadite. See Albite.

SUPPLEMENT.

Acide méphitique. See Carbonic acid.
Acide vitriolique. See Sulphatite.
Acier natif. See Iron.
Acier volcanique. See Iron.
ACMITE. Add Natrosiderite.
Alabaster. See Calcite.
Alabastrite. See Gypsum.
ALBITE. Add TSCHERMAKITE, *von Kobell.*
Alkali minerale aéré. See Natron.
Alkali minerale muriatique. See Halite.
Alkali végétal nitré. See Nitre.
Alkali volatil muriatique. See Sal Ammoniac.
Alkali volatil vitriolé. See Mascagnite.
ALLOPHANE. Add Prilepite.
Alquifaux. See Galenite.
ALTAITE. Add Tellersilberblei.
Alumine mellaté. See Mellite.
Alumine pure. See Aluminite.
ALUMINITE. Add Alumine pure, *H.*; argilla pura, *Nap.*; hydrargillite de Schemnitz, *Dela.*
AMARANTITE, *Frenzel.* $Fe'''_2S_2O_9+7\,H_2O$.
Ambra gialla. See Succinite.
Amianthinite. See Amphibole.
Amiatite. See Opal.
Ammites. See Calcite.
AMPHIBOLE.
TREMOLITE: Add Höpfnerite.
NEPHRITE: Add Giada; igida; pierre des amazons; pierre des reins.
ACTINOLITE: Add Asbestinite, *Kirw.*; Strahlite commune, *Nap.*
ASBESTUS: Add Amianthinite, *Kirw.*; bergleder; lino fossile, *Nap.*; rock wood.
ANALCITE. Add Zéolithe de 24 facettes, *Broch.*
CLUTHALITE: Add Triphanite.
ANDALUSITE, *Werner.*
CHIASTOLITE: Add Maranite.
MYELIN: Add Talc lithomarge.
ANKERITE. Add Braunspath pt., *Wern.*; chaux manganèsiée, *de Born*; siderocalcite, *Kirw.*; spath brunissant, *Broch.*
ANNABERGITE. Add Nickel arsenblüthe.
ANORTHITE. Add Spath de glace; zeolite de Borkhula.
ANTHOPHYLLITE. Add Bolovérite; thalackerite.
Anthrace. See Mineral coal.
Anthracolite. See also Mineral coal.
Anthrax. See also Mineral coal.
Antimoine vierge. See Antimony.
Antimonial ochre. See also Stibiconite.
ANTIMONY. Add Antimoine vierge, *Bomare*; stibium.
APATITE. Add Beril de Saxe; chaux phosphatée chrysolite, *Brong.*; crisolito, *Nap.*
CUPROAPATITE: Phosphate of lime and copper.
ARAGONITE. Add Hard calcareous spar; stängelkalk, *Schum.*; tarnowitzite, *Haid.*; tarnovicite; tarnovitzite; tarnovizite, *Beud.*
Arena de Hierro magnetico. See Magnetite.
Argent blanc de Freiberg. See Tetrahedrite.
Argent merde d'oie. See Chenocoprolite.
Argent vierge. See Silver.
ARGENTITE. Add Mina de plata vidriosa, *Herrg.*
SILVER BLACK. Add Earthy sulphide of silver.
Argile verde di Monte Baldo. See Celadonite.
Argilla pura. See Aluminite.
Arsenical cobalt. See Smaltite.
Arsenical silver ore. See also Dyscrasite.
Arsenicated native silver. See Dyscrasite.

Arsenikblüthe. See Arsenolite and Pharmacolite.

Arsenikkies. See Arsenopyrite.

ARSÉNIOPLÉITE, *Igelström.* $2\,R'''_3As_2O_8$. $R'''_3As_2O_8$. $3\,R''(OH)_2R''_2$= Mn, Ca, Pb, Mg. R'''=Mn, Fe.

ARSENOLITE. Add Native calx of arsenic, *Kirw.*

ARSENOPYRITE. Add Pyrita venenuosa, *Herrg.*

Argentiferous. Add Edler arsenikkies, *Karst.*; mina arsenical blanca, *Herrg.*; pyrite arsenical argentifère, *H.*; pyrite d'argent, *Bomare*; silverish arsenical pyrites, *James.*

Asbestinite. See Amphibole.

ASPHALTUM. Add Bitume solide, *H.*; erdpech schlackiges, *Wern.*; zähes erdpech, *Karst.*

ATACAMITE. Add Copper sand, *James.*; salzkupfer, *Karst.*

AURELITE, *Hidden* and *Mackintosh.* $ThO_2\left\{\begin{matrix}SiO_2\\ \frac{1}{2}P_2O_5\end{matrix}\right\}2\,H_2O$. Tetragonal.

Aurum. See Gold.

Awaruite, Skey. FeN_3. Azoture de fer, *Scacchi.*

AXINITE, *Haüy.* $BR'''_3R''_4H_2(SiO_4)_5O$. Add Tumite, *Nap.*

Azabache. See Mineral Coal.

Azogue hepatico. See Cinnabar.

Azogue nativo. See Mercury.

Azoture de fer. See Awaruite.

Azufre nativo. See Sulphur.

Azul de cobre. See Azurite.

AZURITE. Add Azul de cobre, *Herrg.*; azuro de montagna, *Petr.*; chrysocolla bleue, *Bucquet*; fleures de cuivre bleues, *de Lisle*; kohlensaureskupfer.

Azuro de montagña. See Azurite.

Bacham. See Spinel.

Bagotite.

BARITE. Add Barite vitriolata, *Nap.*; gypse pesant, *d'Arcet*; prismatic heavy spar, *James.*; spath fusible, *Bucquet*: spath pesant en barres, *Broch.*

HEPATITE: Add Barite hépatique, *Deborn*; baryte sulfatée fœtide, *H.*; hepatic barytes, *Allan*; liver stone, *Kirw.*; pietra epatica, *Petr.*

Barite vitriolata. See Barite.

Barkevikite, Brögger. Near Arfvedsonite.

BARYSIL, *Sjögren and Lundström.* $Pb_3Si_2O_7$. Hexagonal.

Baryte aérée. See Witherite.

Baryte hépatique. See Barite.

Baryte sulfatée fœtide. See Barite.

Barzel. See Iron.

Baurachs. See Borax.

Belonesite, Scacchi. MgO, MoO_3. Tetragonal.

BEMENTITE. *König.* $(H_2, Mn)_5Si_4O_{10}$.

Bergbutter. See also Chrismatite.

Beril de oro. See Chrysoberyl.

Beril de Saxe. See Apatite.

BERYL.

EMERALD: Add Glatter smaragd, *Karst.*

Beryl schorliforme. See Topaz.

BERYLLONITE, *E. S. Dana.* $NaBePO_4$. Orthorhombic.

Bezoar minerale is Calcite.

BIHARITE. Add Lardite; pagodite.

BINDHEIMITE. Add Blumite, *Fischer.*

Bischofite. See Chloromagnesite and Plumbogummite.

BISMUTH. Add Marcasite.

Bismuth selenide. See Guanajuatite.

Bismuth vanadate. See Pucherite.

BISMUTITE. Add Selenobismuthite.

Bitume solide. See Asphaltum.

Black carbonate of lead. See Cerussite.

Black friable cinnabar. See Cinnabar.

Black sylvan ore. See Nagyagite.

Black wad. See also Graphite.

BLÖDITE. Add Simonyite, *Tschermak.*

BLOMSTRANDITE, *Lundström.* (U, etc.)$_2$(Cb, Ti, etc.)$_{10}O_{29}+xH_2O$.

Blue martial earth. See Vivianite.

Blue opal. See Lazulite.

Blumite. See also Bindheimite.

Boart. See Diamond.

Borace. See Borax.

BORACITE. Add Boracited calx, *Kirw.*; chaux boracique, *Deborn*; quartz cubique; spato sedativo, *Nap.*

Boracited calx. See Boracite.

BORAX. Add Baurachs, *Brong.*; borace, *Petr.*

BORNITE. Add Cuivre pyriteux panaché, *Brong.*

Bostrichites. See Prehnite.

Brass ore, Kirwan. Add Messingerz.

Brauneisenokker. See Limonite.

Braunite of Jacobsberg, Wermland. $11\,MnO_3$, $3\,MnSiO_3$. Hexagonal.

Brennestone. See Sulphur.

Brézillienne. See Topaz.

Brick-colored mesotype ite.

Brimstone

Bror

Brown iron ochre. See Limonite.
Brown ore. See Titanite.
BRUCITE. Add Magnésie hydratée, *Lucas*; magnésie pure, *Lucas*; magnesite, *Allan*.
Bruchite, *Macadam*. Ca, F, etc.
Buchstamite. See Rhodonite.
BUCKINGITE, *Linck*. 2 $Fe_2(SO_4)_3$. 7 $FeSO_4$. 2 H_2SO_4+60 H_2O.
Calaëm. See Zinc.
Calcareo carbonate de strontiane. See Strontianite.
Calcedoine alterée. See Opal.
Calcedoine silex. See Quartz.
Calcedoine volcanique. See Opal.
Calchante. See Chalcanthite.
Calciform silver ore. See Selbite.
Calciothorite, *Brögger*. Altered Thorium silicate.
CALCITE. Add Common spar.
ARGENTINE: Add Chaux carbonatée dépressée, *Bourn.*; chaux carbonatée nacrée, *H.*; verhärteter aphrit, *Karst.*
FONTAINEBLEAU LIMESTONE: Add Grès crystallisé, *Broch.*; mittelstein, *Hacquet.*
SATIN SPAR: *Kidd.* Add Chaux carbonatée à fibres soyeuses, *H.*
Fetid: Add Rautenspath.
CHALK: Add Creta coherens solida, *Wall.*
OOLITE: Add Chaux carbonatée globuliforme, *H.*; oviform limestone, *Kirw.*; roestone, *James.*
PISOLITE: Add Chaux carbonatée globuliforme testacée, *H.*; stalactite globuleuse, *Deborn.*
SEPTARIA: Add Ammites; bezoar minerale, *Woodward*; méconites; orobites.
LIMESTONE, GRANULAR: Add Chaux carbonatée saccharoïde, *H.*; pierre calcaire grenue, *Broch.*
AGARIC MINERAL: Add Creta farinacea spongiosa, *Wall.*; lac lunæ.
CALC SINTER: Add Alabaster, *Ancients*; chaux carbonatée concretionée, *H.*
Calcowulfenite. See Wulfenite.
CALLAINITE. Add Variscite, *Breit.*
CALOMEL. Add Corneous mercurial ore, *Kirw.*; mina de azogue cornea, *Herrg.*; quicksilver horn ore, *James.*
Capillary alum. See Epsomite.
CARACOLITE, *Websky*. PbHClO. Na_2SO_4. Orthorhombic.
Carbo. See Mineral coal.
Carbon, with 1 to 10 per cent. iron. See Graphite.
Carbonated wood. See Mineral coal.
Carbone oxydulé. See Mineral coal.
Carbone oxydulé ferruginé. See Graphite.
CARBONIC ACID. Add Acide méphetique, *Bewly*; fixed air; spiritus lethalis; spiritus mineralis, *Hoffman*; spiritus sylvestris, *Van Hell.*
CASSITERITE. Add Estaño vidrioso, *Herrg.*; Étain oxydé au maximum, *Dela.*; stagno bruna; stagno nera, *Petr.*
WOOD TIN: Add Étain limoneux, *Deborn*; étain oxydé concretionné, *H.*; étain statactite, *Delisle.*
Cassiteron. See Tin.
CELADONITE. Add Argile verde de Monte Baldo, *Nap.*
CELESTITE. Add Spath séléniteux de Sicile, *Delisle.*
Cerasite. See also Phosgenite.
Cerastite. See also Phosgenite.
CERUSSITE. Add Black carbonate of lead; mine de plomb noire, *Broch.*; native ceruse, *Kirw.*; plomo blanco, *Herrg.*; plomo negro, *Herrg.*
CHALCANTHITE. Add Calchante, *Brong.*; copparosa turchina, *Petr.*
CHALCOPYRITE. Add Mine de cuivre jaune, *Deborn*; pirite gialla, *Petr.*; yellow sulphuret of copper, *Allan.*
Chaux boracique. See Boracite.
Chaux carbonatée à fibres soyeuses. See Calcite.
Chaux carbonatée concretionée. See Calcite.
Chaux carbonatée depressée. See Calcite.
Chaux carbonatée globuliforme. See Calcite
Chaux carbonatée globuliforme testacée. See Calcite.
Chaux carbonatée nacrée. See Calcite.
Chaux carbonatée saccharoide. See Calcite.
Chaux cuivreuse unie à un peu d'acide muriatique et d'eau. See Atacamite.
Chaux magnésiée. See Dolomite.
Chaux manganèsiée. See Ankerite.
Chaux phosphatée chrysolite. See Apatite.
Chaux sulfatée calcarifère. See Gypsum.

Chaux sulfatée fibreuse. See Gypsum.

Chaux sulfatée niviforme. See Gypsum.

Chenocoprolite. Add Argent merde d'oie, *Broch.*; cobalt arséniaté argentifère, *H.*

CHLOROMAGNESITE. Add Bischofite, *Pfeiffer.*

CHRISMATITE. Add Bergbutter.

Chrome mica. See also Muscovite.

CHRYSOBERYL. Add Beril de oro, *Herrg.*; œil de chat; opalescent chrysolite, *Nonnull.*

Chrysocolle bleue. See Azurite.

Chrysolite ordinaire. See also Apatite.

Cinabrio. See Cinnabar.

CINNABAR, *Jameson.* Add Black friable cinnabar, *Jameson*; ethiops mineral natif, *Broch.*; mine de mercure sulfureuse rouge, *Delisle*; mohr mineral, *Broch.*; native cinnabar, *Kirw.*; oxyde de mercure sulfuré rouge, *Deborn.*

HEPATIC CINNABAR: Add Azogue hepatico, *Herrg.*; mina de azogue hepatico, *Herrg.*

Cinnamit. See Garnet.

Cliftonite. A graphite pseudomorph.

CLINOPHÆITE. Add Wattevillite, *Singer.*

Cobalt and lead selenide. See Clausthalite.

Cobalt arséniaté argentifère. See Chenocoprolite.

Cobalt arsenical ferrifère. See Smaltite.

Cobalt blanc. See Cobaltite and Smaltite.

Cobaltum cineraceum. See Smaltite.

Cobaltum ferro et arsenico mineralisatum. See Smaltite.

Cobalt mica. See also Wad.

Cobaltic manganese. See Wad.

COBALTITE. Add Cobalt blanc.

Cobre. See Copper.

Coconucite. See Aragonite.

Columnar coal. See Mineral coal.

Columnar diaspore. See Wavellite.

Common schorl. See Tourmaline.

Copparosa turchina. See Chalcanthite.

COPPER. Add Cobre, *Spanish*; cuprum, *Latin*; nehósheth, *Hebrew*; rame, *Italian.*

Copper, arsenical. See also Whitneyite.

Copper sand. See Atacamite.

Corindon télésie. See Corundum.

Corindon zincifère. See Gahnite.

Corneous mercurial ore. See Calomel.

CORUNDUM. Add Corindon harmophane, *H.*

EMERY: Add Fer oxydé quartzifère, *H.*

SAPPHIRE: Add Corindon télésie, *Brong.*; saphir femelle; saphir mâle; sappira.

Creta coherens solida. See Calcite.

Creta farinacea spongiosa. See Calcite.

Crisolito. See Apatite.

Crisolito de Vulcani. See Vesuvianite.

Cristobalite. SiO_2 in octahedral twins.

CROCOITE. Add Plomo roxo espatico, *Hergg.*

Cross-stone. See also Harmotone.

Crucite, Thoms. Fe_2O_3. Pseudomorph after Arsenopyrite.

Cryphiolite, Scacchi. Near Wagnerite. Monoclinic.

Cuir de montagne. See also Pilolite.

Cuivre corné. See Torbernite.

Cuivre dioptase. See Dioptase.

Cuivre gris platinifère. See Tetrahedrite.

Cuivre oxidulé. See Cuprite.

Cuivre pyriteux panaché. See Bornite.

Cupreous idocrase. See Vesuvianite.

Cuprum. See Copper.

CYANITE. Add Schorl bleu, *Dela.*; sorlo ceruleo, *Petr.*

DAHLLITE, *Brögger* and *Bäckström.* $4\,Ca_3P_2O_8 \cdot 2\,CaCO_3 + H_2O$.

Decomposed flint. See Opal.

Deodalite. See Orthoclase.

DESCLOIZITE. Add Ramirite, *Velasquez.*

Diabolus metallorum. See Tin.

DIADELPHITE. $(Al, Fe, Mn)_2(AsO_4)_2 \cdot 8\,Mn(OH)_2$. Hexagonal. Manganese arsenate.

DIAMOND. Add Boart; virum.

Diana. See Silver.

Diaspero. See Quartz.

DIHYDROTHENARDITE, *Markownikow.* $Na_2SO_4 + 2\,H_2O$. Monoclinic.

DIOPTASE. Add Cuivre dioptase, *Broch.*; emeraude de Sibérie, *Ferber*; kupfergrün crystallisirtes, *Estner.*

DOLOMITE. Add Chaux magnésiée, *Deborn*; muricalcite, *Kirw.*; spath composé, *Woulfe.*

CONITE, *Reuss*: Flintkalk, *Reis* [illegible]

DYSCRASITE, *Fröbel*. Add Arsenical silver ore, *James.*; arsenicated native silver, *Kirw.*; mine d'argent antimonial, *Daubrée.*

DYSODILE. Add paper coal; papier kohle; terre bitumineuse feuilletée, *Bomare.*

EDISONITE, *Hidden*. TiO_2. Orthorhombic.

Edler arsennikkies. See Arsenopyrite.

Eisenblende. See Uraninite.

Eisenkolumb. See Columbite.

Eisenschaum. See Graphite.

Eisenschwärze. See Magnetite.

ELROQUITE. Add Phosphochromite.

Emeraude de Sibérie. See Dioptase.

Emeraude du cap. See Prehnite.

Emeraudine. See Dioptase.

Emeraudite. See Pyroxene.

ENSTATITE. Add Victorite, *Meunier.*

EPIDOTE. Add Glassy actinolite, *Kirw.*; rayonnante yitreuse, *Broch.*

EPSOMITE. Add Capillary alum, *Kirw.*; magnésie sulfaté ferrifère capillaire, *H.*; natural Epsom salt, *Kirw.*; sal de los Alpes, *Herrg.*; vitriol de magnésie, *Dela.*

Erdpech schlackiges. See Asphaltum.

ERYTHRITE. Add oxyde de cobalt rouge, *Deborn.*

EARTHY COBALT BLOOM: Add slaggy cobalt.

Estaño. See Tin.

Estaño vidrioso. See Cassiterite.

Étain oxydé au maximum. See Cassiterite.

Étain oxyde concretioné. See Cassiterite.

Étain limoneux. See Cassiterite.

Étain stalactite. See Cassiterite.

Ethiops martial natif. See Magnetite.

Ethiops mineral natif. See Cinnabar.

Fahlunite. See Gahnite.

False amethyst. See Fluorite.

False diamond. See Zircon.

False ruby. See Fluorite.

False topaz. See also Fluorite.

Fassaite, Dolomieu. Add Stilbite orangée, *Brong.*; zéolithe rouge de Tyrol, *Fanjas.*

Federsalz. See Halotrichite.

Feldspath cubique. See Orthoclase.

Feldspath laminaire. See Orthoclase.

Feldspath muschliger. See Topaz.

Feldspath verte. See Microcline.

Feldspathites. See Siderite.

Ferro aerato. See Siderite.

Ferrum. See Iron.

Fiedlerite, vom Rath. Monoclinic.

Fire damp. See Marsh gas.

Fixed air. See Carbonic acid.

Fleurs de cuivre bleues. See Azurite.

Flèurs de cuivre vertes. See Malachite.

FLUORITE. Add False ruby; false topaz.

Foliated beryl. See Topaz.

FORSTERITE. Add Peridot blanc.

Fossil oil. See Naphtha.

GADOLINITE. Add Kohlenblende of Bornholm, *Klapr.*; zéolite noire, *Geyer.*

GAHNITE. Add Corindon zincifère, *Hising.*; fahlunite, *Karst.*

Galène antimonial. See Galenite.

Galène speculaire. See Galenite.

GALENITE. Add Alquifaux, *Lucas*; bleischweif, *Wern.*; galène speculaire, *Deborn*; mine de vernis des potiers, *Lucas.*

STEINMANNITE: Add Galène antimonial, *Dela.*; plomb sulfuré antimonifère, *H.*

GARNET.

GROSSULARITE: Add Cinnamite, *Poggi*; olyntholite, *Fischer.*

SPESSARTITE: Add Manganèse granatiforme, *Broch.*

ANDRADITE: Add Green amorphous garnet; grenat émarginé noir, *H.*; schlackiger granat, *Karst.*; splittriger granat, *Karst.*; xantholite.

Garschaum. See Graphite.

Gèanthrace. See Mineral coal.

Gediegen tellur. See Tellurium.

Gediegen wismuth. See Bismuth.

Gelbarsenblende. See Orpiment.

Gesso. See Gypsum.

Giada. See Amphibole and Jadeite.

GIBBSITE. Add Hypothetical phosphate; richmondite, *Kenng.*

Glätter smaragd. See Beryl.

GOLD. Add Aurum; hiranya, *Sauss.*; oro; zahab, *Hebrew.*

Gold of Nagyag. See Nagyagite.

GÖTHITE.

PYRRHOSIDERITE: Add Ruby mica.

Grafio piombino. See Graphite.

Granatförmiges braunsteinerz. See Garnet.

GRAPHITE. Add Black wad; carbon, with $\frac{1}{10}$ per cent. of iron, *Kirw.*; carbone oxydulé ferruginé *Tondi*; eisenschaum; garschaum; grafio piombin o.

Gray antimony. [illegible]ee also Jamesonite.
Green amorphous garnet. See Garnet.
Grenat émarginé noir. See Garnet.
Grenatite. See also Leucite.
Grès. See Quartz.
Grès crystallisé. See Calcite.
Grès élastique. See Quartz.
Grès flexible. See Quartz.
Griqualandite, Hepburn. A name for Tiger's eye.
Guhr sileceux. See Opal.
Gyps pesant. See Barite.
Gyps violet de Rosena. See Lepidolite.
GYPSUM. Add Chaux sulfatée niviforme.
ALABASTER: Add Alabastrite.
MONTMARTRITE: Add Chaux sulfatée calcarifère, *H.*
SATIN SPAR: Add Chaux sulfatée fibreuse; œil de chat.
SELENITE: Add Spathiger gyps, *Karst.*
Halbzeolith. See Prehnite.
HALITE. Add Alcali mineral muriatique, *Bergm.*; muriacite; sel de cuisine, *Broch.*
HALOTRICHITE. Add Federsalz, *Karst.*; trichites.
Hard calcareous spar. See Aragonite.
HARMOTOME. Add cross-stone, *James.*; stauro baryte, *Sauss.*
Hepatic barytes. See Barite.
HEMATITE.
RED HEMATITE: Add Fer oligiste concrétioné, *H.*; fer oligiste luisant, *H.*
RED OCHRE: Add Fer oligiste argillifère, *H.*; fer oligiste terreux, *H.*; fer oxydé graphique, *H.*
SPECULAR IRON: Add Fer oligiste écailleux, *H.*; fer sublimé des volcans, *Faujas*; hierro micaceo, *Herrg.*
Hierro. See Iron.
Hierro micaceo. See Hematite.
Höpfnerite. See Amphibole.
HOHMANNITE, *Frenzel.* $Fe'''_4S_3O_{12}+13\ H_2O$.
Holzasbest. See also Xylotile.
Horsfordite, Laist and *Norton.* $Cu_{11}Sb_2$(?).
Houille bacillaire. See Mineral coal.
Houille éclatante. See Mineral coal.
Houillite. See Mineral coal.
HOWLITE. Add Raphite.
Hydrargillite de Schemnitz. See Aluminite.
Hydrate d'alumine. See Wavellite.
HYDROZINCITE. Add Zinc carbonaté hydreux, *H.*; zinc hydraté, *Dela.*
HYPERSTHENE. Add Miroirtane, *Dela.*
Hypostilbite. See Laumontite.
Igelströmite. See also Pyroxenite.
Igida. See Amphibole and Jadeite.
Indivisible quartz. See Opal.
IRON. Add Acier natif, *Dela.*; barzel, *Hebrew*; ferrum, *Latin*; hierro, *Span.*; mars, *Alchem.*; native steel.
Iron manganese chrysolite. Add Stirlingite, *Kenng.*
JADEITE. For other synonyms see under AMPHIBOLE, var. NEPHRITE.
Jarrowite. See Thinolite.
Jaspe sanguine. See Quartz.
Julla. See Mineral coal.
Kasdir. See Tin.
Keklasmite.
Kératite. See Quartz.
Kerosene shale. See Torbanite.
Késeph. See Silver.
KRENNERITE. Add Bunsenin, *Krenner*; müllerite, *Beud.*; weissgolderz, *Müller*; weiss sylvanerz, *Wern.*; white tellurium; yellow gold glance; yellow sylvan ore, *James.*
Kupfergrün. See also Malachite.
Kupfergrün, crystallisirtes. See Dioptase.
Lac lunæ. See Calcite.
LANSFORDITE, *Genth.* $3\ MgCO_3 \cdot MgOH_2+21\ H_2O$.
Lardite. See also Biharite and Talc.
LAUMONTITE. Add Brick-colored mesotype, *Allan*; hypostilbite, *Mallet.*
LAZULITE. Add Blue opal, *Allan*; quartz rézinite bleu grisâtre; splitriger lazulite, *Karst.*; tyrolite, *Dela.*
LEAD. Add Ophéret, *Hebr.*; piomo, *Ital.*; saturn, *Alchem.*
Lead chromo-molybdate. See Wulfenite.
Lead chromo-phosphate. See Pyromorphite.
LEPIDOLITE. Add Gypse violet de Rosena, *Deborn*; pétalite, *de Drée.*
LEUCITE. Add Grenatite, *Daubrée.*
Light gray silver ore. See Tetrahedrite.
Lime columbate. See Azorite.
LIMNITE. Add morass ore; morassy iron ore.
LIMONITE.
OCHRE: Add Brauneisenokker, *Wern.*; brown iron ochre, *Kirw.*; ochre martial brun, *de Lisle*; ocre de hierro pardo, *Herrg.*

Lino fossile. See Amphibole.
Liver pyrites. See Marcasite and Pyrrhotite.
Liver stone. See also Barite.
Luna. See Silver.
Magnélithe. See Zoisite.
Magnes qui niger est et feminei sexus iodque sine viribus. See Pyrolusite.
Magnesia, native. See also Magnesite and Periclasite.
Magnesia nigra. See Pyrolusite.
Magnesia parva cum portione martis et jovis mixta. See Wolframite.
Magnesia phosphate. See Wagnerite.
Magnésie pûre. See Brucite.
Magnésie sulfaté ferrifère capillaire. See Epsomite.
Magnesite. See also Brucite.
MAGNESITE. Add Magnésie carbonatée, *H.*; native magnesia, *Thom.*; roubschite, *Dela.*
MAGNETITE. Add Arena de hierro magnetico, *Herrg.*; fer magnétique sabloneux, *Broch.*; mina de hierro magnetico, *Herrg.*
OCHREOUS: Add Eisenschwärze, *Reuss*; ethiops martial natif, *Deborn*; fer noir, *Deborn*; fer oxydé au minimum, *Dela.*
MALACHITE. Add Fleurs de cuivre vertres, *Delisle*; kupfergrün, *Wern.*; verde de cobre, *Herrg.*
Manganese borate. See Sussexite.
Manganese garnet. See Garnet.
Manganèse granatiforme. See Garnet.
Manganèse oxidé carbonaté. See Rhodochrosite.
Manganese phosphate. See also Hureaulite.
Manganèse rouge. See also Rhodochrosite.
Manganese silicate. See also Tephroite.
Manganbrucite. See Brucite.
Maranite. See Andalusite.
MARCASITE.
HEPATIC PYRITES: Add Liver pyrites, *Kirw.*; pirita d'azufre, *Herrg.*; pirita hepatica, *Herrg.*
KYROSITE: Add White copper; white copper ore.
MARGARODITE. Add Talcite, *Thom.*
See Iron.
GAS. Add Fire damp.
MASCAGNITE. Add Alkali volatil vitriolé, *Berg.*; sel secret de Glauber, *Delisle.*
Mazapilite, König. Ca, Fe, As. Orthorhombic.
MELANTERITE. Add Vitriol naturliche, *Wern.*; vitriolo de marte, *Petr.*
MELLITE. Add Alumine mellatée, *Dela.*; piedra melada, *Petr.*; succin cristallisé, *Deborn.*
Mercure coulant. See Mercury.
Mercure vierge. See Mercury.
MERCURY. Add Azogue nativo, *Herrg.*; mercure coulant; mercure vierge, *Delisle.*
Mercury sulphide. See also Metacinnabarite.
Mère d'emèraude. See Quartz.
METEORITES. Add Moonstone; thunderstone.
Mica. See also Ripidolite.
MINERAL COAL.
ANTHRACITE: Add Anthrace, *Ital.*; anthracolite, *Deborn*; anthrax, *Lat.*; carbo, *Lat.*; carbone oxydulé, *Tondi*; gèanthrace, *Tondi*; houille éclatant, *Karst.*; houillite, *Daub.*; julla, *Span.*; plombagine charbonneuse, *Deborn.*
BITUMINOUS COAL: Add Muscheligerglanz-kohle, *Wern.*
BROWN COAL: Add Carbonated wood, *Kirw.*; columnar coal, *James.*; houille bacillaire, *H.*; stangenkohle, *Wern.*
JET: Add Azabache, *Span.*; pétrole compacte, *Deborn*; succin noir.
MILLERITE. Add Native nickel; pyrite capillaire, *Broch.*
MIMETITE. Add Muscheliges phosphorblei, *Karst.*
Mina arsenical blanca. See Arsenopyrite.
Mina de azogue cornea. See Calomel.
Mina de azogue hepatico. See Cinnabar.
Mina cubica. See Pharmacosiderite.
Mina de hierro magnetico. See Magnetite.
Mina de plata blanca. See Tetrahedrite.
Mina de plata nigra. See Stephanite.
Mina de plata roxa. See Proustite and Pyrargyrite.
Mina de plata vidriosa. See Argentite.
Mine blanche riche. See Tetrahedrite.
Mine d'argent antimoniale. See Dyscrasite.
Mine d'argent grise. See Tetrahedrite.

Mine de cuivre antimoniale. See Tetrahedrite.

Mine de cuivre jaune. See Chalcopyrite.

Mine de fer limoneuse en roche. See Siderite.

Mine de lieux bourbeux. See Limonite.

Mine de mercure sulfureuse rouge. See Cinnabar.

Mine de vernis des potiers. See Galenite.

NAGYAGITE. Add tellure aurifère et plombifère; tellure auro plombifère, *H.*; tellure natif aurifère et plombifère.

Native magnesia. See Periclasite.

NAUMANNITE. Add Selenide of silver.

Occidental topaz. See Topaz.

OCTAHEDRITE. Add Wiserin, *Klein.*

OPAL.

FIORITE: Add Amiatite.

TRIPOLITE. Add rock meal.

Pierre de lard. See Biharite and Talc.

Pierre des Amazons. See Microcline.

PILOLITE. Add Bergleder; bergkork; cuir de montagne.

PINITE.

AGALMATOLITE: Add Mother of diaspore.

PLUMBOGUMMITE. Add Bischofite. *Fischer.*

PYRITE. Add Tellurpyrite.

PYRORAURITE. Add Igelströmite, *Heddle.*

PYROMORPHITE. Add lead chromophosphate.

PYROPHYLLITE. Add Figure stone.

QUENSTEDTITE, *Linck.* $2\ FeO_2H$. $8\ Fe_2(SO_4)_3+10\ H_2O$.

RHODOCHROSITE. Add Brown spar.

Riebeckite, A. Sauer. Near Amphibole.

Rock cork. See Pilolite.

Rock leather. See Pilolite, not Xylotite.

Sartor. See Clay.

SCHEELITE. Add Wolfram blanc.

SCHWARTZEMBERGITE. Add Lead oxychloriodide, *Forbes.*

Shale. Alaunerde; alaunschiefer, *Werner.*; alum earth; alum shale; alum slate; argentine, *Kirw.*; argillaceous slate; argillite; brandschiefer.

SMALTITE.

CHELEUTITE: Add Wismuthkobalterz, *Plat.*

SPERRYLITE, *H. L. Wells.* Pt. As_2. Isometric.

Spiessglasokker. See Volgerite.

Steinbutter. See Clay.

Stone butter. See Clay.

Stone marrow. See Clay.

SULPHOHALITE, *Hidden* and *Mackintosh.* $3\ Na_2SO_4$. $2\ NaCl$. Isometric.

TALC. Add Agolite; bildstein.

Thinolite. Add Jarrowite.

Thonstein. See Clay.

TITANITE. Add Xanthitan,

Topferothon. See Clay.

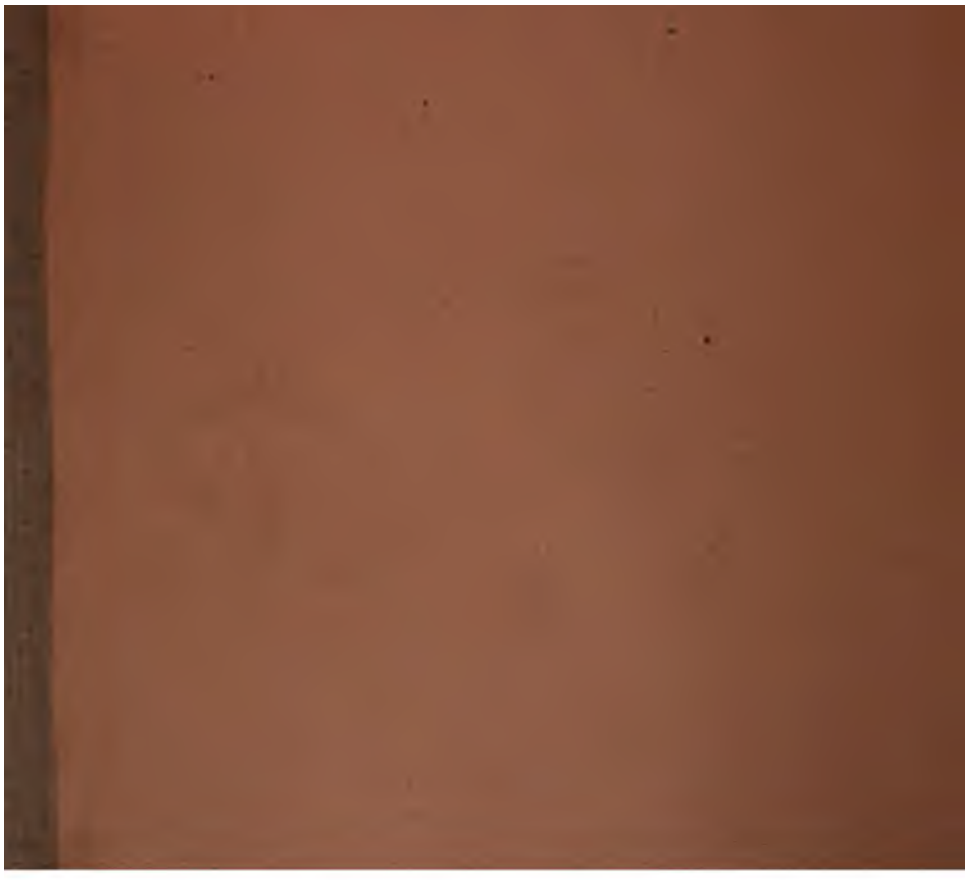
Tripal. See Clay.

VESUVIANITE.

CYPRINE: Add Cupreous idocrase.

WULFENITE. Add Calcowulfenite; lead chromo-molybdate.

ZIRCON. Add Erdmannite, *Esm.*



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